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The Royal Institute of British Architects' New Charter.

WE now have before us the New Charter, as finally settled by the legal advisers of the Institute, with the Council's announcement that application for a Grant of the same is about to be made to Her Majesty.

Thus, as far as the Institute is concerned, finality has been attained in a matter that has been under consideration, in a more or less definite form, for at least the last twelve years. We congratulate the Institute that its Jubilee year is likely to witness a settlement of this question which appears to commend itself to the majority of its members.

On the whole, we consider the general construction of the Charter good and business-like. The document is long, but this length is seen to mean that its framers have considered carefully the detailed working of the Institute, and have made provision for almost every contingency that experience suggests as probable. By analogy, it is a specification written by a competent and careful man, rather than the brief document of a novice who covers his lack of prevision by the general clause, "Provide all that is necessary."

The preservation of the time-honoured Original Charter, with the prestige attaching thereto, has been happily accomplished by a recital of the felicitous and dignified preamble and incorporating section of that ordinance.

After provision for the Transition from the old to the new order, we get in natural sequence, first, the classes of members constituting the corporate body; next, the executive heads; then the Council to advise and direct. Examinations follow, as occupying a prominent place among the duties of the Institute. The holding of property is then regulated. The mode of expressing the corporate voice in general meeting is next provided for, and the rights and privileges of the classes are defined. Lastly, provision is made for the creation of By-laws, and all that is new being declared, Her Majesty's confirmation of the unrepealed portions of the Old Charter is added.

We now turn to a detailed examination of the new administrative provisions, and we shall endeavour to make these the clearer by comparing them with those to be superseded.

Section 3 of the "Original" Charter defined the members of the Institute to consist of three classes, viz., Fellows, Associates, and Hon. Fellows. Section 2 of the New Charter defines that there shall be five classes,—three subscribing and two non-subscribing,—and in addition, "such other classes, subscribing or non-subscribing, as may be hereafter established." The five classes are: Fellows, Associates, and Hon. Associates; Hon. Fellows and Hon. Corresponding Members.

Fellows were required to be architects, "who have been engaged as principals for at least seven successive years in the practice of civil architecture." They are now in addition required to be at least thirty years of age, and after five years the Institute has power to make it incumbent on candidates for this class to pass an examination, although the Council has (properly) a dispensing power in special cases. It appears to us desirable that architects in practice only should be Fellows, especially as another class provides a place for those "out of practice."

Associates were to be "persons engaged in the study and practice of architecture for a less term than seven years, and were to be at least twenty-one years of age. They were ineligible for any office but that of auditor, and had no right to vote, or "to interfere in the regulation of the affairs" of the Institute. The words "for a less term than seven years" are now omitted, and this omission incidentally permits of an architect in full practice remaining for life in this class if he thinks fit. This is contrary to the policy often officially advocated, and otherwise strongly urged, compelling qualified members of the Institute to move to the senior class with its greater financial and other responsibilities. Candidature for this class is now only attainable by passing an examination. The insertion of this "Compulsory Examination" test in the Charter (rather than in By-laws) settles finally a question which has been long debated, and on which there has been great difference of opinion. Some of its advocates claim it to be the first step towards obtaining State authority to close the profession.

But probably the greatest innovation in the Charter is that which gives the Associates the right of voting on all subjects except the making, altering, &c., of By-laws, and consequently the right of interfering "in the regulation of" all affairs left to general meetings. Their inability to hold office,—other than that of President, Vice-President, and Hon. Secretary,—disappears. The opinion we expressed in April last that the concession of this right of voting should have been done with more deliberation, is confirmed. We say this in no spirit of niggard conservatism or of distrust of the Associates, but on the ground that the wording of the clause shows, on the face of it, a lack of that thought and consideration which is apparent in the document generally, and we fear it is on the limitation of this "right" that questions may hereafter arise. We need not discuss the matter in detail, but it must not be forgotten that the Associates are and may remain a majority of the members, and as resolutions of the Institute are by majority, the Associates have the power to determine many things. On the other hand, the reservation in regard to By-laws in fact limits their right to a much greater extent than may at first sight appear.

The old class of Hon. Fellows is now represented by the new class of Hon. Associates. Hon. Fellows were to be "persons unconnected with building as a trade." They had no vote, but were eligible for the office of President. The New Charter omits the quoted words, and so does not exclude persons connected with the building trade, otherwise eligible. Hon. Associates are to be persons of "position" or of "eminence," or "experience" in the arts and sciences, "not professionally engaged in practice as architects." This permits of architects out of practice being elected. The wording is new, but no new principle is introduced. Members of the class are given a right to vote, subject to "such limitations and restrictions" as By-laws may prescribe, and in any event they are barred from voting on the making of By-laws, and from holding the offices of President, Vice-President, and Honorary Secretary.

The new class of Honorary Fellows is, as we have suggested, distinct from the old one. It is now, speaking in general terms, for the most part a class of patrons,—Members of the Royal Family, high officers of State, and other "illustrious or distinguished persons"; and members of this class are eligible as President. No Honorary Fellow, except he be President, has a right to vote, but he is only excluded from holding the offices of Vice-President or Honorary Secretary. It is not clear on what principle "distinguished" men are to be elected to this class, rather than to the class reserved for men of "position" and "eminence in art," &c. We presume some very clear distinction will be made in practice, or heart-burning will result.

Honorary Corresponding Members appear for the first time in the Charter, but they have long been known to the Institute. They may not be British subjects nor architects practising within the British Empire. This class at present contains many highly distinguished foreign architects, and the advantage to the Institute of having such correspondents is so apparent as to need no comment. Being non-subscribers, these members are excluded from voting.

The next clause (8) gives the Council power to decide conclusively on the admissibility or otherwise of candidates. This was made a

subject for strong condemnation at one of the meetings, but on reflection it must commend itself to the members. As was pointed out by one gentleman, there may be grounds for the rejection of a candidate which could not be stated publicly without risking an action for libel or unduly injuring the candidate, and it is, in our judgment, fit and proper that the elected Executive should deal with the matter. In America the election, not of candidates only, but of members, is entirely in the hands of the Board of Trustees, the corresponding body to the Council of the Royal Institute of British Architects. In the Incorporated Law Society members are similarly elected by the Council, and in the Royal College of Surgeons the same applies in respect of those members who do not enter by examination. The Royal Institute of British Architects' Charter is thus seen to be more liberal than any of those quoted, and we think the Institute has wisely committed the *nomination* to the Council alone, whilst retaining its own power to *elect*. We trust, however, the Council will, in the exercise of the responsibility now permanently thrown on them, recognise the necessity for investigating the candidates' fitness both from the honourable and technical points of view, and, in order to strengthen their hands, we commend for consideration the By-law of the American Institute in regard to such investigation.

The new matter in this section closes with a clause entitling subscribing members to a certificate. The existence of this will, we believe, be of service, not only to individual members, but to the Institute itself.

We must not omit to notice the power to create additional classes. That practical effect will be given to this permission follows, we presume, on its insertion. It is a little strange that not one of the five classes enumerated is open to the admission (except they be eminent or distinguished) of Borough or Local Board Surveyors,—the "District Surveyors" of the provinces,—or any others of the large technically "official" class with whom architects are necessarily always in contact, and it must be to the interest of the members of the Institute individually and collectively to cultivate fraternal relations with these gentlemen.

Sections 3 and 4 deal with the Executive Council. Section 5 of the Original Charter provided for the President, three Vice-Presidents, and "two Secretaries," who, with not more than fifteen nor less than seven other members, were to form the Council. The President was to be a Fellow or an Hon. Fellow. The other members of Council were to be Fellows. The New Charter omits the "two Secretaries," and it provides for the number of the Vice-Presidents, for the "one or more Hon. Secretaries," and for the other members to be fixed as By-laws may prescribe. The restrictions as to the classes from which the President, Vice-Presidents, and the Hon. Secretaries are to be taken remain as before. The first noteworthy change here is that only *Honorary* Secretaries of the Institute are to have seats at the Council, the Secretary being henceforth one of the officers to be appointed and dismissed by the Council. We think it highly desirable that the Secretary should be removed from the always possible contingency of a non-election, and that he should have one rather than two sets of masters. The other changes of importance, it will be noted, are that not only is the number of the Vice-Presidents, Hon. Secretaries, and other members left open, but the "other members" are not as before confined to the one class.

Acts of the Council under the Old Charter (Sec. 8) were valid provided not less than three members were present. No quorum is now defined, that being left to the By-laws. The New Charter only admits the validity of Acts "provided the number of the Council be not reduced below one half the full number prescribed by the By-laws," a decided improvement.

In framing the By-laws the delicate task is thrown on the Fellows of settling the composition of the Council and the quorum. If, as is probable, Associates are elected to the Council, it will be primarily as representatives of the junior class, and we think whatever proportion of Fellows to Associates is fixed for the Council itself should be maintained in the quorum. It must not be overlooked that the Council of a large body has to deal with questions involving wide experience and mature judgment, qualities, speaking broadly, pertaining to the senior class in any body.

We now come to another matter. By Section 4 of the Original Charter "general meetings and the Council" had the entire direction and management of the "affairs" of the Institute; and by Section 8 the Council had sole management "subject to the powers vested in general meetings" of the income and other affairs. In the new Section 4, clauses 16 and 17, the council has the sole management of the "affairs" and the application of the "funds" (as distinct from property) for the purposes defined, subject to By-laws. The control of general meetings is thus superseded by that of By-laws, but incidentally the control is still exercised by the Fellows, who previously had it in a different form. This is, as far as the funds are concerned, at variance with the principle laid down in Section 6, to which we shall refer later on. As to the form of control, that of By-laws is more definite and deliberate than a mere resolution of a meeting, taken, perhaps, on the spur of the moment. Of course, the By-laws being more definite will require careful consideration.

The Council is, without control, to fix fees and apply benevolent funds.

Section 5 gives the Council power to make the necessary arrangements for and connected with examinations throughout the British Empire.

Power is given to the Institute to grant "diplomas or certificates" in such manner as By-laws may prescribe. These are, of course, distinct from the certificates of membership previously referred to.

The next subdivision (6) treats of property. Hitherto this has vested absolutely in the Fellows, and they in general meeting had power to dispose of it as they pleased. It is by the new Section 6 made to vest in the Royal Institute as represented by its subscribing members (non-subscribing members being by Clause 25 excluded from participation), and the disposition of it or any part of it is placed in the hands of the Council, subject to a previous resolution of a general meeting (duly confirmed) at which all subscribing members can vote. The principle of this change is sound, as all those who contribute to the property have equitable rights in it and should properly have a voice in its disposition. But the management and superintendence of the property is in the hands of the Council alone,—a businesslike arrangement having its parallel in the trust committed to a Board of Directors.

It does not appear by this section that the Council's management of the property is to be regulated in any way, but it is probable that this may be inferred from Section 4, clause 16. In any event, the regulative power would only rest in the By-laws, and, consequently, in the Fellows, who frame them.

Clauses 23 and 24 are amplifications of the original preamble, serving to particularise the purposes for which property may be received and held.

Section 7 deals with general meetings, which by a subsequent interpretation are described as "ordinary, business, special, annual, or otherwise."

Under this heading the meetings are to be held "at least" once a year, and otherwise as By-laws may prescribe, and the power of members to "requisition" a meeting is noted.

We have already dealt with the rights of the various classes, detailed in Clauses 27 to 31.

Clause 32 ordains the mode of recording the vote of the Royal Institute, an important definition without which it is at least questionable by what authority the seal of the Institute could be used. We notice no provision, as is usual, for the custody of the seal or for its use, either in this clause or in the "matters to be prescribed by By-laws."

Under the old Section 4, "the majority of members *present*, and having a right to vote thereat, had to decide upon the matters propounded" at the meeting. The new clause leaves the decision to such a majority as By-laws may prescribe "of those members having a right to vote and voting at such meetings." *Presence* is no longer essential, and the majority is of those persons *exercising* their right to vote. The casting vote of course remains.

By-laws are to determine whether voting is to be "in person, by proxy, by ballot, by voting papers, or otherwise," but we have little doubt that some method of voting by absentees will be at once decided on. We think this right, with proper safeguards. A danger to be guarded against is the possibility of an unscrupulous use of this machinery for personal or party purposes. Thus, a circular asking for votes for a particular meeting might be sent far and wide, containing *ex parte* statements of an alluring kind in support of this or that policy or person. At the meeting the fallacy of the statements or the injurious consequences of their adoption could and would be exposed, but this exposure could not influence the votes held by proxy. To meet this difficulty it might be a By-law that the decision of any meeting should be held in abeyance if challenged by a majority of those present and having a right to vote, and the question should forthwith stand adjourned until a future meeting, to give all members the opportunity of reading the published proceedings at the original meeting and forming their judgment thereon: the adjournment to cancel the proxy. This need only apply to matters held by the said majority to be of urgent importance.

The last section (8) is devoted to By-laws.

The Transition Section (No. 1) states that until new By-laws "to be prepared as ordained by this our Charter have been adopted as hereinafter provided," the Royal Institute shall be administered in accordance with the original Charter and the present By-laws. This wording had, when the draft was under consideration at the last meeting, relation to an elaborate clause showing how and when the new By-laws were to be prepared. The clause has disappeared (following a suggestion and reference ordered at the meeting), but the wording of the Transition Section has not been modified, so that it is scarcely applicable to the new Clause 33, which does not ordain any preparation, but simply provides that the Institute "may from time to time" make and adopt By-laws not repugnant to the law or inconsistent with the Charter.

Then follows a series of "matters to be prescribed by By-laws." The list omits the subjects of "Management by the Council" and "Diplomas," both specially mentioned in Section 4 (clauses 16 and 21 respectively) as subject to By-laws.

In the draft settled by general meeting, there was a final clause in these words, "and generally such other matters as may from time to time seem requisite for the better execution of this our Charter, and for the furtherance of the objects of the Royal Institute." If greater brevity were desired, the end could have been attained by adding to the second line of Clause 34 the words "among other things." We trust that the pointed excision of the one and the omission of the other taken in conjunction with the inelastic wording of the defining clause cannot be held inferentially to exclude from the By-laws anything for which provision is not otherwise made in the Charter.

We also notice the omission from paragraph (*a*) of the words added at the meeting dealing with "mutual professional relations." This omission is, perhaps, of little importance, and the question may have been held to be one that would be dealt with by one of the "standing committees" for which provision is made in paragraph *f*.

These standing committees for the first time appear as an integral part of the Institute's machinery. They are likely to do good, and in any event their appointment,—already an accomplished fact,—bears evidence of the vitality of the guild.

We conclude by drawing attention to the last, but by no means least, of the subjects contained in the list. Paragraph *h* contains

the germ of what is popularly called "Federation." It treats of the "relations" of the Royal Institute to branches or "other societies having kindred aims and objects." Already the Institute has made progress in this direction. Its committee, containing representatives of many provincial societies, has been sitting for some time, and we are glad to learn from an announcement at the last meeting that good progress has been made in the preparation of a scheme. We, of course, reserve our judgment entirely as to the merits of this until we see it, but all members of the architectural profession throughout the Empire will be glad if the means of intercourse among them are improved, and their common action rendered possible,—if, in short, the seed sown in an inconspicuous corner of the Charter blossoms into a great tree, under whose shelter they may have a common home, and the art they love so well may be fostered and developed, "Usui civium, decori urbium."

A SANITARY RETROSPECT.—II.

IN their sewerage and drainage works most of the towns at first looked no farther into the question than the means of getting rid of the sewage at the nearest practicable outfall,—the river or any stream of water,—the main object being to do away with cesspools, which were sunk a few feet below the surface of the ground, and into which the refuse liquids thrown out of the houses found their way, or rather partly so, for they had mostly to meander over the surface in irregular channels. Cesspools were not intended to contain the liquids, but to let them soak away into the ground, otherwise they would have been troublesome to empty. After the ground had become thoroughly permeated with these foul liquids, which of course took a long time, it was found that they had polluted the water of the wells to an alarming extent. All sorts of people, it was found, had died after short illnesses without the cause being apparent, until by diligent inquiry, and by comparing numerous circumstances one with another, it was found that the wells from which these people had procured water were contaminated, whereupon they were closed and the pump-handles taken away. How many persons were enfeebled to one who died was not ascertained, but possibly the effects have lasted to this day. It was found that living in foul air and drinking bad water produced sickness, feebleness, and inability to work; probably also carelessness of the quality of the work done. The air was fouled by exhalations from decomposing refuse on the surface, especially where the houses were so crowded together that the air was stagnant for long periods of time; for although the wind might blow freely over the house-tops, the air took a long time to get into motion down below, in the closed courts with no outlet at the farther end and but a small archway at the entrance. It made things worse that the refuse liquids were thrown on to the ground along with the solid refuse, for if the dry refuse had been kept dry there would have been but little exhalation from it, but by mixing slop water and all together the vapour impregnated the atmosphere, and made it most unhealthy.

So the foul liquids were carried off by drains and sewers to any outfall. It was thought better to discharge the sewage even into a river than to leave it on the premises of houses, part of it soaking into the ground and the rest evaporating, except a portion which was now and then carried off by rain into the street drains; but this made things even worse, for the drains, which had been formerly laid to carry off the surface-water of the streets, were of very rough construction,—although they were sometimes called sewers, nevertheless,—and the sewage left behind a deposit of black mud which could not be got at by the scavenger, and it became even a greater nuisance there than on the surface, for part of it had before been occasionally carted away. It was very much insisted upon, at the outset of the drainage and sewerage of towns, that the interior of sewers should be even in form and not too large, and that where large sewers were required the bottom should be made smaller than the upper part, in the form of an egg in cross section, so that the flow of sewage might be as much as possible concentrated, which would make it pass off more quickly than when spread out over a wide and rough bottom.

To this end, where the area to be drained was not large, pipes were advised to be used for sewers, the pipes being glazed in the kiln during the process of burning, by which the sewage was carried off much more cleanly.

When it was the general custom to make rivers the outfalls of sewers the evil did not appear in its full extent, for much of the black fetid mud was not discharged directly into them, but lodged in certain parts of the sewers where the current was slight, and, therefore, the deposit proportionately great. When left undisturbed long enough the heavy rainstorms carried it forward from time to time, but at all other times the appearance of the outfall was not so bad as it would have been if the sewers had been of better form and construction. The rivers were in fact relieved of some degree of pollution at the expense of the freshness of the atmosphere of the streets, under which so much of this black mud was spread out. It was, of course, attempted in many ways to lessen this air-pollution, one of which was to prevent filth being washed into the sewers by ordering the inhabitants to remove it from their premises, each for himself, and in the same year in which the Public Health Act was passed, 1848, a Nuisance Removal Act was passed, and another in the following year, in substitution for a similar Act which had been passed in 1846; but these were all superseded in 1855 by a comprehensive Nuisance Removal Act, and a separate one called the Disease Prevention Act, introducing the principle of cure in aid of that of prevention, by providing for the dispensing of medicines, guarding against the spread of disease, and affording medical aid to persons afflicted by or threatened with epidemic, endemic, or contagious disease. These Acts did not, as most others for local government had done, exclude the metropolis.

In 1855 the Metropolitan Board of Works was created, under the Metropolitan Local Government Act of that year, and the old Commissioners of Sewers were abolished. All these great movements are traceable to the action of the General Board of Health. In 1850 that Board issued a long report on the Metropolitan Water-supply, followed by numerous appendices and documents. They pointed out the evils of drawing water from the Thames within the tideway, where it was exposed to sewage contamination (for, be it remembered, even the metropolis discharged its sewage direct into the river at that time), and in 1852 the Metropolitan Water Act was passed, obliging all the Thames water companies to remove their intake works beyond the tideway, which extends as far as Teddington Lock.

The Lambeth Waterworks Company had, indeed, already led the way by voluntarily removing their pumping works from Belvedere Wharf, Lambeth, to Thames Ditton, and after the Act of 1852 all other companies took a similar course. These were the Chelsea Waterworks Company, who took their water at Chelsea Reach; the Southwark and Vauxhall Company, whose works were at Battersea; the West Middlesex, at Hammersmith; and the Grand Junction, at Kew Bridge. The East London Waterworks Company, who took water from the river Lea, afterwards also established an intake on the Thames above the tideway. The New River Company retained their original sources, and incorporated with their own works those at Hampstead-road.

It may not be necessary to attribute the removal of these works to any action of the General Board of Health. Great companies, as these are, are public bodies, and need no interference; but the coincidence of the movement with the existence of the Board may be mentioned as a fact of the time.

Many waterworks had been made, besides those of the metropolis, for commercial reasons, each one under its own Act of Parliament. A water supply to a town is a measure as essentially sanitary as is that of the removal of waste water and other refuse, but it is also one of convenience, and it has often been comparatively easy to move a town authority in this respect, because manufacturers required a supply of water for trade purposes. But in the numerous non-manufacturing towns, where the powerful advocacy of this interest did not exist, the sanitary requirement has often been neglected. Wells and pumps were, no doubt, expensive things to keep in repair, but the expenses of some members of local authorities were not beyond their means, and for the multitude there were common wells. The water in the well of a private house, however, even in the same town, and within a stone's-throw of another well, may be of much better quality. It is not drawn down so much as is the water of a common well, and being being kept up at all times nearly to its highest possible level, it is not so liable to contamination by soakage into it from the surrounding ground as is one which supplies a large number of people, who keep the water down, and facilitate the soakage into the well of whatever foul water surrounds it; and wells of this sort, which continue for any considerable time to yield the large quantity of water which a numerous population requires, are necessarily sunk in porous ground, for otherwise the yield of water would soon come to an end; and it is because the porous ground at once yields water and permits soakage that these wells are improper sources of supply. The case is different where a well is sunk upon a fissure of rock which brings water from afar. Deep wells often afford the best kind of water, when its natural hardness has been reduced, and when this is caused by an excess of carbonate of lime, as it is in all chalk waters, it is easily and perfectly removed, on the large scale, without injury to the brightness of the water by the process invented by Dr. Thomas Clark, and since modified by others.

But of the shallow wells in gravel in towns where the overcharged cesspools had no other natural drainage-outlet, statistical investigations into the causes of illness and death proved that it would be advisable to close some of them. When they were sunk they were not surrounded with houses, and, probably, answered their purpose, but in the altered circumstances it seemed desirable to procure a supply of water elsewhere, even though it was not required for trade purposes to any great extent; and it was much urged by the General Board of Health that where sewerage works were made water supply should accompany them. It would have been useless to urge water supply without drainage, and equally so to drain houses without having first provided sewers with which they mighr be connected, but the two works together seemed very desirable. The supply of water, however, has always been looked upon more as a self-paying commercial concern than in any other light,—as a commodity to be disposed of at a price.

The numerous special Acts which had been passed for the construction of waterworks led to a general Waterworks Clauses Act being passed in 1847, embodying most of the clauses usually inserted in these separate Acts, so that afterwards this Act was incorporated with each special Act, which in itself related only to local circumstances. One of the objects which the originators of the sanitary movement seem to have had in view in urging the necessity of a water supply was the establishment of public baths, and the Acts passed between 1846 and 1848 enabled inhabitants of towns to supply themselves with the means of cleanliness, if they could induce the local authority to put the Act in force, the preamble of which asserts that it is desirable, for the health, comfort, and welfare of the inhabitants of towns, to encourage the establishment therein of public baths and washhouses and open public bathing-places, and enacted certain small charges to the labouring population. Rivers, the water of which is mostly of such small degree of hardness as to be suitable for

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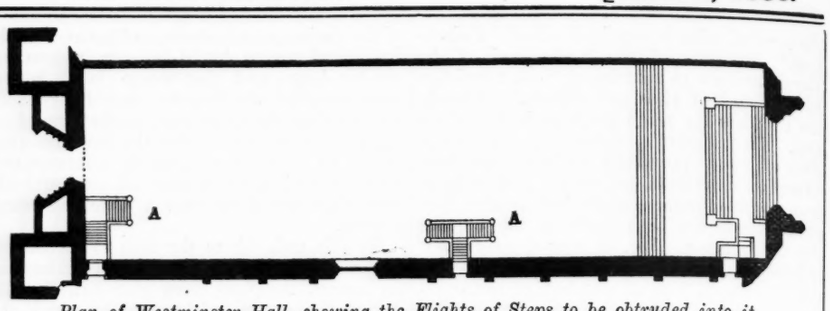
ordinary bathing, and which are the natural bathing-places of the labouring population, were fouled by manufacturing refuse and other refuse, and made unfit for the purpose. If, then, it was intended to provide, at a small charge, a substitute for the loss of these places, it was a very proper thing to do, but it is one thing to offer facilities in an Act of Parliament and another to get them carried out. The local authority might, "if they think fit," establish such alternative bathing-places, but the expenses being directed to be paid out of the borough fund the local authority in many cases left the Act in abeyance, perhaps not seeing any sufficient reason why people should be provided with bathing-places at all, and forgetting that the rivers had been rendered unfit for the purpose, not by those whose proper bathing-places they were, but by those who contributed to the borough fund and held the key, and to whom the baths and wash-houses were of little or no use. Where these have been established and afterwards closed, on the representations of committees that they did not pay, or for other reasons easily found or asserted to exist when there was no desire to carry out the Act of Parliament in its integrity, the bath-keepers and subordinate persons employed have not been encouraged by committees to keep them open, by offering no hindrance to their enjoyment by those who could pay but little. One penny each person, or one penny for several children, was all that the local authority could charge under the Act. It might very well have been enacted,—very reasonably enacted,—that free bathing-places should be substituted for the rivers made unfit, but at that time, forty years ago, those who had the health and welfare of the people of a town committed to their hands did not take any wide view of affairs and did not see that national welfare is but a multiple of that of every locality. In 1858 the functions of the General Board of Health were transferred to the Local Government Act Office, that Act and the one of 1848 being construed as one, which took effect in all places where the Act of 1848 was in force. The Act of 1858 transferred to the Home Office certain sanctions, orders, and appeals, which had been exercised by the former Board, and the Local Government Act Office was made a sub-department of the Home Office for the execution of the Act, and for the assistance of local boards, and became, without the necessity of further legislation, or sanction of the central authority, capable of adoption by resolution of town councils or improvement commissioners. Local boards might take lands compulsorily, under this Act, for sanitary purposes, and in other respects their powers were greatly extended. An Amendment Act in 1861 provided for the cost of proceedings in adopting the Act of 1858; and another Amendment Act of 1863 prevented the adoption of the Act of 1858 in places of less than 3,000 population; and in each of the years 1860, 1863, and 1866, the Nuisance Removal Act of 1855 was amended. Sewage continued to be discharged into rivers, but in 1865 a Sewage Utilisation Act was passed, enabling local authorities to dispose of sewage on land, and to take measures to prevent the pollution of streams, and in 1867 another Act gave powers to local authorities to dispose of sewage beyond their own districts, and to combine with adjoining districts for the purpose of disposing of the sewage. This, however, they have seldom done.

NOTES.

AS the British public, and those members of the Legislature who are supposed to take some sort of interest in architectural subjects, seem to be still quite in the dark as to the practical results of the proposed "restoration" of cloisters outside Westminster Hall, and their use as committee-rooms, we give a small plan of the Hall, showing how the flights of steps to these cloister committee-rooms will obtrude on the hitherto-unbroken area of the Hall. The projecting steps are shown at A A, and are taken from Mr. Pearson's plan appended to the Report of the Proceedings of the Westminster Hall "Restoration" Committee. One



Plan of Westminster Hall, showing the Flights of Steps to be obtruded into it in connexion with the so-called "Restoration."

flight of steps shoulders up against one side of the main entrance door, the other projects like a promontory into the hall. Westminster Hall has from time to time been used as an area for great ceremonials; its dignity and symmetry for such purposes will now be destroyed. Nearly every trace of the supposed cloisters had disappeared; the restoration is almost entirely conjectural; the use of the spaces as committee-rooms, for which they are inconvenient in approach and in lighting, is a mere afterthought to pretend a practical object in the restoration, which in reality is an archæological architect's plaything; and for such a piece of sham architecture as this we are to have the interior of our great historic hall permanently disfigured. Is there no person in authority with sufficient common sense to stop this piece of absurdity?

THE Secretary of the Institute of Architects contributes a letter (in the *Times*) to the Royal Academy controversy, which brings forward pretty strongly one point to which sufficient attention has not been given, viz.: that the function of an Academy of Arts is not limited to the encouragement and illustration of one art only,—that of painting. Mr. White points out that according to the legal document or instrument of its foundation the Royal Academy is to have a professor of architecture, who is to lecture to students upon architecture; and that there shall be a professor of perspective and geometry, who shall give regular instruction in geometry and linear and aërial perspective, the projection of shadows, &c. The professorship of architecture, he observes, has been vacant for five years, and that of perspective and geometry for twenty-six years. It is true that lectures on architecture have been given in a desultory way from time to time; but the professorship has lapsed. Mr. White draws also an instructive contrast between the composition of the English Royal Academy and the French Académie des Beaux Arts; the former consisting of fifty-nine painters, seven sculptors, five architects, and two engravers; the latter of fourteen painters, eight sculptors, eight architects, six engravers, and four musicians, these being always kept up to the same proportion. The consequence in the English Academy has been that art has come to be regarded as the painting of pictures, to the exclusion of the proper study and recognition of other forms of art; and when there is a vacancy, a body so largely composed of painters naturally tends to the election of painters.

SEVEN months and a half after the close of the year, the Board of Trade have contrived to publish the "Railway Returns" of 1885. The length of railway open in the United Kingdom at that date has increased in the year by 305 miles, or from 18,864 to 19,169. The capital paid up has increased by 14,393,688*l.*; or from 801,464,367*l.* to 815,858,055*l.* The gross revenue has fallen from 70,522,643*l.* to 69,555,774*l.*, or by 966,869*l.* The working expenses have fallen from 37,217,197*l.* to 36,787,957*l.*, or by 429,240*l.* They bear almost exactly the same relation to revenue as they did in 1884, or 52·77 per cent. in place of 52·88. And the final outcome of the net earnings on capital has fallen from 4·16 per cent. in 1884 to 4·02 per cent. in 1885, being a lower proportion than has been found to exist in any year since 1866, which was the same, with the exception of 1867, which was 3·91 per cent. The highest ratio recorded in the Board of Trade tables was 4·74 per cent. in 1872. There were conveyed 2,221,000 passengers more; 2,201,000 tons of merchandise less; and 161,000 tons of minerals more, in 1885 than in 1884, but as no account is given of the average distance in either case, little useful information can be elicited from the statement. It appears, however, that upwards of 2,000,000 more train miles were run in 1885 than in 1884, so that in railway transport, as in so many other industries, more work appears to have been done for an equal cost as compared with the preceding year. The increase in mineral tonnage has been accompanied by a decrease of over a quarter of a million sterling in receipts, but here again the absence of information as to length of haul leaves the calculation imperfect.

WE are glad to notice, from the returns of the American Iron and Steel Association, that this particular trade is manifesting a decided tendency to revival; and although the productions of last year still showed a considerable excess over consumption, yet the lessening of stock was at a much greater proportion than it has been for some years. The resumption of railway building has brought about this, so far, satisfactory result; and while this resumption has principally taken place in the shape of branch lines, there are signs of new and important undertakings springing up again, particularly in the newer states and territories of the far West. It is true that an American iron boom is not of the same immediate interest to this country as it used to be when we supplied the majority of the rails; for the United States are quite capable of supplying themselves, however many miles are wanted. Nevertheless, it is encouraging to find the depression lifting from such a staple industry, and it will not be long before its good effects radiate towards the English markets.

WITH regard to the competition for the proposed new Municipal Buildings for Edinburgh, of which we spoke last week, we learn that at a meeting of the Lord Provost's Sub-Committee on the new Municipal Buildings, held on Monday, communications were submitted from a number of architects,—including the Royal Institute of British Architects and the local Architectural Association,—with the view of inducing the Council to bind themselves to accept the designs of the architect who in the competition may be awarded the first prize of 250*l.* It is understood, says the *Scotsman*, that the Corporation are not likely to adopt such a suggestion, "although the intention is that the plans of the most successful competitor will be selected for the new buildings." In the meantime the matter was remitted to Mr. Morham, the City Architect, and a small committee, for further consideration. We are sorry to hear that the municipality persist in so ill-advised a course as that attributed to them.

IN regard to the Saxon Chapel at Deerhurst, we hear that the Ecclesiastical Commissioners have declined to take this ancient building in hand, but have expressed them-

selves willing that the work of reparation should be undertaken by a responsible committee of gentlemen of the neighbourhood. Accordingly a committee has been organised for the purpose of effecting the substantial repair of the fabric, and of presenting to view as far as is practicable its ancient appearance. Sir William V. Guise, Bart., has been nominated President, and the committee, consisting of the following names,—Mr. J. T. Agg-Gardner, M.P., Cheltenham; Mr. William M. Baker, Hasfield Court; Rev. W. Bazeley, M.A., Matson Rectory; Rev. E. J. Bower, M.A., Charlton Kings; Rev. F. E. Broome-Witts, M.A., Norton Vicarage; Rev. G. Butterworth, M.A., Deerhurst Vicarage; Rev. E. R. Dowdeswell, M.A., Bushley Parsonage; Mr. Samuel H. Gael, Charlton Kings; Sir John Maclean, F.S.A., Glasbury House, Clifton; Mr. J. Henry Middleton, Cheltenham; Mr. Algernon Strickland, Apperley Court; and Mr. J. Reginald Yorke, Forthampton Court,—will be glad to receive any subscriptions towards the expenses of the work. A specification has been presented by Mr. Thomas Collins, of Tewkesbury, which meets the approbation of the committee, and Mr. Collins is prepared to complete the work for the sum of 120*l.*

THE Belgian architectural journal, *l'Emulation*, proposes that a united exhibition should be made of the designs of three eminent Belgian architects not long since departed, to wit, Poelaert, Carpentier, and Neute. The first-named alone is known much of in England, owing to the interest excited by his great building the Brussels Law Courts. He was a man of rare and remarkable genius, though a kind of genius somewhat *outré*, and disposed to wander too much from the logical paths of architectural design, at least as far as detail was concerned. *L'Emulation* styles him "the Gustave Doré of architecture." His great building may be described as a magnificent general conception, full of very odd and often unsatisfactory detail. In a certain sense the credit of this work must be shared by the large-minded and liberal Government which gave him full scope for his genius, instead of cutting down all an architect's chances to gratify a miserable spirit of economy. If the designs of the other two architects named, who had not the same chances, are at all equal in interest and originality to those of Poelaert, the exhibition ought to be well worth carrying out.

A PROCESS for protecting masonry against the influences of rapid changes of the weather is being applied, by the Brick and Stone Waterproofing Company of New York, to the obelisk in Central Park, which has suffered serious injury. The surface of the stone is carefully cleaned, and all loose particles of stone are removed. During dry weather the stone is heated by small charcoal stoves, indented portions by benzine lamps, up to about 49° R., and at once saturated with a hot liquid, consisting of paraffin, creosote, and turpentine. The liquid is prepared in the following manner:—A mixture of 1 part by weight of creosote and 4 parts of turpentine is first boiled. Then 25 parts of paraffin, heated up to boiling-point, are added. This mixture solidifies at 48° R., and has consequently to be applied in a hot state to the heated surface, into which it enters, according to its porosity, 2·5 to 5 centimètres. In cooling the liquid solidifies, and forms a thin coating, which protects the stone against water as well as the destructive effects of the large quantities of acids present in the atmosphere of large industrial towns. The coating remains smooth, and prevents the adhesion of dirt and soot.

THE works of the Metropolitan Railway Extension have now reached Rickmansworth, and the eccentricities of railway competition are already strikingly exemplified. The new line runs immediately at the back of the main street, for which purpose various houses have had to be demolished. The site of the station at the west end of the town is already railed off. The present station of the London and North-Western Railway is at the south-east corner of the place, and the line is crossed by the new one about a quarter of a mile away. It would have been obviously far more for the public convenience that there should have been one joint station on the site of the existing one, which could have been made without difficulty. This would also be the station of the line which will some day connect Rickmansworth with Uxbridge, and the Metropolitan line, if extended further northwards, could have run along this line and then turned away up the valley as at present projected. Instead of this, Rickmansworth will have two stations,—always a public inconvenience,—and the High-street, as a site for houses, will largely be destroyed by the proximity of the new line, which runs parallel and close to it.

RESPECTING the movement initiated and carried on by the Plumbers' Company for the registration of efficient plumbers, we have been asked to call attention to the terms of an advertisement which appears in another column, as it seems that there is still much misapprehension as to the conditions under which registration can be effected. A perusal of clauses 4, 5, 6, 7, and 8 of the advertisement in question will serve to remove some current misstatements, and will afford information on other points. We are glad to hear that applications for registration continue to come in in large numbers, and that the question of establishing provincial centres of registration is not being forgotten.

THE Ninth Annual Industrial Exhibition in connexion with the Polytechnic Young Men's Christian Institute (the old "Polytechnic") was opened on Wednesday by Sir John Lubbock, who spoke strongly in favour of the importance of elementary scientific education. The collection of work done in the classes is on view up to the 10th, and some of the young men are at work in the room, as affording practical examples of what is being taught and practised in the establishment. The articles exhibited include some examples of artistic work,—wrought-iron, wood-carving, inlay, &c., which are creditable in design and execution, but the purely mechanical work appears to be the best in its kind. The fees for the various classes are very low, and the whole Institute owes, we believe, a great deal to the practical liberality of Mr. Quintin Hogg, who is doing an excellent work in thus affording opportunity to youths of the poorer class to gain technical instruction which, according to our present educational system and ideas, they have little chance of getting in our public elementary schools.

AN architect has sent us the conditions of competition for the Sunderland School Board Schools, which is another charming example of the ideas of treating the Profession which seem to animate the gentlemen who draw up conditions of competition. The Board offer premiums of 50*l.*, 20*l.*, and 10*l.* for the three designs respectively which shall be placed first in order, and then proceed to say:—

"The design selected for the first prize of 50*l.* to become the absolute property of the School Board, and to be used by them or not, as they think fit, without payment of any further or other commission or allowance whatsoever. The Board do not bind themselves to employ the author of the design selected for the first prize to superintend the building of the said schools if constructed upon his design, and they hold themselves free to employ any other person for that purpose."

This kind of statement is now becoming a constant factor in instructions to competing architects, and the Profession ought to make a firm stand against it. It amounts to this: in the first place, no architect who is worth anything cares to plan and design a building for another man to carry out; secondly, supposing that he is willing to do so, he is entitled, according to the usual scale of professional charges, to a commission of 2½ per cent. on the cost of the building. In the case under notice it is proposed to spend 7,000*l.* on the school, so that the architect who furnished the plans, without superintending the building, would be entitled to a fee of 175*l.* The invitation of the School Board is, therefore, that the architect they are pleased to select is to be prepared to give them his work for less than one-third its value, and see another person carry it out. We hope no architect of ability will have anything to do with a competition on these terms. Recently a number of architects have undertaken to go in for no competition unless a professional referee is appointed, and the promoters of competitions have been compelled in many cases to bow to this decision. Let the architects add to this an undertaking to go in for no competition unless the successful competitor is to be employed on the usual terms, and this kind of attempt to pick the pockets of the Profession will soon be put a stop to.

THE TRIUMPHAL ARCHES OF THE ANCIENT ROMANS.*

AMONG the many varying works of that remarkable race of men, the ancient Romans, there is a class of monuments which they may be said to have originated,—a class which was entirely the outcome of their martial spirit, or of their recognition of actions rendered for the good of the state,—their triumphal arches.

Their temples, their circuses, the arrangement as well as the adornment of their homes, had their beginnings in the civilisation of Greece; their theatres and their arts of engineering and construction had alike their origin in that favoured country. These circumstances have to be remembered when we look upon, say, the Coliseum; or upon some long stretch of Roman road; or upon an equally, if not more conspicuous, aqueduct; and we may be inclined to consider that the amphitheatre, the road, or the water-supply, is the class of monument which of itself more truly reveals the genius of the Latin race. Would we study aright the spirit of this wonderful people,—which may hardly be said to have passed away from the men of to-day, so much does it yet live in our midst,—we must study all their works. If we would shorten the study, we can obtain the most ready insight by the consideration of the single class of triumphal arches.

A moderate amount of research reveals the fact that the number of these arches still remaining is very considerable, far more so than many casual observers may anticipate; and although the task would be a very laborious one to make an entire catalogue of all existing or known specimens, yet reference to the most important of those remaining will furnish instructive results.

Perhaps the policy of the wise fathers of the Roman people was never better exercised than in fostering the martial spirit of its sons, and when so much was done to render rewards to all who had served their country well on the field of battle. Crowns and rewards were bestowed on the brave soldiers who had sustained the prestige of their city and country on some hard-fought fight; while, above all, the honour and applause rendered to the heroes on their return from war was freely and unstintedly lavished. It was, in fact, a part of the national spirit to recognise at its proper worth all acts of bravery and endurance undertaken or suffered by the army. How many a stubborn fight was won, and difficult campaign carried to a successful end, by the hope of the reward, the hearty applause of the assembled multitudes welcoming back their victorious troops! How many pens have described the joy of the city, the ringing cheers, the outbursts of enthusiasm of the citizens, as the toil-worn soldiers slowly marched through the marble streets of the Imperial City!

The "triumphs" granted by official decree were, by policy and by the outcome of the national spirit, the highest reward that could be rendered by the Senate to the victorious chief; and the simple arrangements which were adopted in the early days of the city, in the times of the Republic, were doubtless as eagerly coveted, and the chief's arm was as much nerved to exertion to attain the reward, as were

* We propose in this and the next three numbers to accompany these notes on the Triumphal Arches by illustrations of some of the principal examples. With the exception of the Arch of Septimius Severus, the view and details of which are from Gailhabaud, these illustrations will be reproductions from some fine and now scarce Italian and French engravings, which have an artistic value of their own, independent of their illustrative use.

those of the generals of later times when greater display was used.

Indeed, the occasion of a "triumph" very soon became an opportunity for the display of the overweening signs of Roman love of conquest and power. Thus, the processions were made of vast length; trophies of all kinds were multiplied and introduced; representations of the cities and towns captured were borne aloft by the soldiers; works of art; the noblest statues of Greece and Asia; camels, elephants, and many other beasts from the far East; captive kings of renown; gold, silver, images of the gods captured in the cities,—all served, with long lines of prisoners, to swell the Roman triumph. The treatment of the prisoners taken in war was the most brutalising feature of these processions. Were they ever so brave or noble, these vanquished foes were exposed to the insults and execrations of the lowest of the Roman population, and the lives spared that the captives might take a part in the show, were frequently taken with more or less cruelty as soon as the procession was at an end. It is recorded that to so great an extent was the procession swelled that one day alone was not sufficient for the arrangements. The triumph of Sulla lasted two days, and that of Æmilius Paulus, awarded for the victory over Perseus, lasted three days.

The victor to whom the triumph had been accorded would assemble his troops outside the gate of the city by which entrance was to be obtained, which was gaily decorated for the occasion, and here the procession would be marshalled. Then, at the *porta triumphalis*, erected in honour of the occasion, it would be met by the civil magistrates, who would take the head of the procession, lictors with their axes keeping the opening through the crowds of applauding spectators. Then would follow the tibicines, the best of the captured booty, models of the cities, pictures of the battles won, statues of river gods, or such like, either carried by soldiers with crowns of victory, or, where possible, borne aloft on the points of lances. Some of these are actually represented upon the bas-reliefs of the arches which remain, and will be noted hereafter. Then would follow the oxen for sacrifice, having gilded horns, with attendants and priests. Following these, were placed groups of musicians, singers, &c.; and lastly, the hero of the triumph, clad in the toga picta and the tunic taken for the occasion from off the statue of awful Jupiter within the temple of the Capitol. The triumphal chariot was drawn by four horses, although in some cases other animals appear to have been employed, and the hero stood in it to receive the acclamations of the multitude, while a *servus publicus* stood behind him holding the *corona triumphalis* above his head. The course of the procession was past temples and baths, along the Sacred Way, through the Forum, to the Capitol, the course being planned to enable it to be seen by the largest number of the multitudes present. On arrival at the Temple of the Capitoline Jupiter, the oxen were sacrificed in the presence of the people before the altar, and presented as an offering to the god who had rendered victory to the arms of Rome,—a touching and beautiful act of which heathendom might be proud. Festivities and other rejoicings closed the day to the victors, but not to the captives.

Originally the triumphs were awarded by the Senate, not only to the Dictators chosen to command in times of danger, but to Consuls and Prætors, and, in later times of the Republic, Legates also were permitted to enter the city in triumph, permission being granted to men of the latter rank if they had commanded independently and had brought a victorious army to the Capitol from their own province, the slaying of 5,000 enemies being deemed a sufficient service rendered to the state to warrant the granting of the much-coveted honour. Unhappily for Rome, the day came at length when the jealousy of the emperors would not allow of even the temporary honour being rendered to a subject which a triumph afforded, and they were accorded to the emperors only, the last triumph obtained being that of Octavius, after the battle in which Antony was so signally defeated. The triumphs which follow may have been celebrated with no diminution of pomp; indeed, it is on record that each succeeding one was made more imposing than its predecessor. More than ever were the streets decorated with trappings and hangings; more than before were sacrifices rendered in the temples blazing with lights and fragrant with incense. More than before were the notable captives paraded in the processions, with all the gorgeous display of the treasures of the conquered countries.

But still the free martial spirit of the older days no longer existed, the applause was not earned by one of the people, but was rendered, it may be, to some emperor whose share of the campaign had been of the smallest, and who was standing in the place and instead of the generals who were worthy.

It is to these later times and ceremonies that the triumphal arches we are about to describe belong. At first, doubtless, the arches erected were of a temporary festal character, erected for the occasion and removed subsequently. Later, the emperors sought to perpetuate their triumphs for all time by the erection of costly arches in marble or stone, built in a manner to survive the flight of time and the war of elements. While, as we have said, the triumphal arch is the outcome of the Roman habits and requirements, so is the architectural design of these structures essentially Roman and not Greek in its form and treatment. Diversified as they are, built as they may be in varying positions and under different conditions, they yet indicate the great difference that exists between the works of the one people and the other to so marked a degree that in no instance known to us could any one example be taken for a Greek rather than a Roman work. They have the semicircular arch and the vault in a marked manner not found in Greek works; columns are introduced, and all the subordinations of architrave, frieze, and cornice; yet these latter features are applied rather than being used structurally as the Greeks would have used them; ornament is introduced with no sparing hand, and sculpture occupies a very prominent position, yet it is used as figured work never was by the Grecian artists.

Among the numbers of triumphal arches which remain to us there are those at Rome which call for special notice, and there are also others in the Roman provinces, in various parts of Europe, Asia, and Africa, which belong essentially to the same class, and were called triumphal arches by the Romans themselves, although they have no relation to the processions such as we have described in the Roman metropolis itself.

References exist in the old Latin writers to several arches which once existed in Rome, but which have now passed away; and interesting as may be the considerations of the architectural designs of these, their position, &c., and the few notices relating to them which we may glean from representations on coins and other records, yet the consideration of the actual works remaining may be the best for the practical purposes of this inquiry. The Arch of Titus claims our first attention (see lithograph illustration), since it is the oldest of the three special arches which most particularly merit remark; but it is not that which is nearest in position to the Coliseum, at the entrance, to speak generally, of the Sacred Way through the Forum up to the Capitol. It was erected, as is so well known, to commemorate the Jewish victories of Titus, in the lifetime of his father, Vespasian, but from the fact that it was not completed until the time of his successor, Domitian, it is evident that it is not the identical arch beneath which Titus's procession passed, and we may therefore conclude that it has taken the place of only a temporary structure. Indeed, the beauty of the sculptures and the richness of the design at once attest that this is no building erected in haste. The date of its erection would prepare us to find a design of simple grace and proportion, and we are not disappointed. A single central archway flanked by two columns on each side, half-engaged only, passes through the pile, the vault of which is coffered, the panels being filled with boldly-carved foliage of great beauty. The sides of the arch are occupied by the sculptured panels containing the reference to the momentous events at Jerusalem which have given to this arch such peculiar interest. The sculpture represents one of the groups of soldiers of the triumph of Titus, doubtless as they appeared on the occasion, bearing the sacred seven-branched candlestick and other vessels of the Temple of Jehovah. On the opposite side is the triumphal car, with Titus standing to receive the applause of the multitude, crowned by a winged Victory, having palm branches, while the genius of the city of Rome leads the way. These two spirited groups are sensibly put in a position where, instead of being borne aloft to meet the violence of the elements, they are sheltered by the arch of the vault. The order is composite, and the work of great beauty; the frieze is filled with sculptured figures, doubtless intended to represent other portions of the procession, for there are the oxen for the sacrifice, the soldiers, the figure of the river god, Jordan, and many others. When we regard the beauty of the work, it is painful to consider the loss occasioned by the hand of man rather than the violence of time, and we are reminded of the wretched vandalism which had rule over the superb monuments of Rome in Mediæval times. Old engravings show but too forcibly the treatment to which this fine arch had been subjected. Its lateral portions were demolished, and the whole was encased in a mass of barbarous brickwork, forming a part of one of the fortified houses of some Roman family. All this has fortunately at last been swept away, and the sides are rebuilt. The difference of appearance between the old work and the new being still apparent after the sixty years that have intervened, the student can thus fortunately distinguish between what is original and what is added. The old design is, however, recovered for all practical purposes. And as an example of Roman work of the best and purest period, the Arch of Titus is deserving of the most careful study. The material is white marble.

Next in date, close to the Capitol, is the fine Arch of Lucius Septimius Severus, of which we reproduce here the illustration from Gailhabaud's "Monumens Anciens et Modernes." It was erected to commemorate his foreign wars, and may be studied as an example of the deterioration of the beauty of detail and the excellence of workmanship which had occurred in the short period of about a hundred years subsequently to the erection of the arch of Titus. The design shows a grandiose mass, doubtless inspired by some one or another of the older arches which have perished. It consists of a bold central opening, and two side arches, there being four wholly-detached composite columns, each worked out of a single block of marble, mounted on pedestals on each side. The frieze is plain, but architrave and cornice are overloaded by carved members. There is a large attic entirely occupied from flank to flank by the lengthy inscription of deeply-sunk lettering, once filled in with bronze, that material so lavishly used in Roman works for this purpose, and for many others. An abundance of sculpture covers the monument. Winged Victories are represented as inscribing upon shields in attitudes not unlike what some have rendered as the correct design of the Victory (as they would call it) of Brescia, while the whole of the wall space above the side arches is covered with representations of battles and sieges, arranged in parallel lines one above another. Winged Victories holding trophies fill in the spandrels of the large arch. The sides of the monument are plain, indicating that it was intended to be seen in front. The internal sides are also plain, but the arched roof is finely coffered. Old engravings show that this arch was also fortified, the more modern buildings being built above the attic, along which ran a row of battlements. These have been removed long since, and in 1803 Pius VII. had the earth which had accumulated for centuries from 15 ft. to 20 ft. in height, above the base of the arch, removed to its original level, and a protecting wall of enclosure erected around it.

At the entrance of the Sacred Way closest to the Coliseum, and in advance of the Arch of Titus in position, is the magnificent Arch of the Emperor Constantine. Its design is not unlike, to speak generally, that of the Arch of Severus, since, like it, it consists of a fine central archway and two lateral smaller ones. There are four Corinthian columns on each face, the cornices being mitred around them, and these support heavy pedestals, with statues, the pedestals being much wider than the columns. The inscription is of considerable length, and it occupies the compartment of the tall attic over the central archway. The attic is continued over the side arches, and filled in with quadrangular panels of sculpture, representing scenes in the life of the Emperor Trajan, while other subjects also relating to Trajan and not to Constantine occur in the circular panels over the side arches and in the numerous friezes. The inscriptions on this arch, like that of so

many other Roman monuments, were formed of bronze letters, but now only the deeply-cut channels for the bronze remain. The arch was formerly buried to a considerable depth, but it was repaired under the pontificate of Clement XII., and excavated to its original level. This Pope's idea of the needs of the building were somewhat remarkable, since one of the eight beautiful yellow marble columns was taken away by him for re-erection in the Church of St. John Lateran, and another of white marble substituted.

The appearance of the Arch of Constantine has occasioned a discussion of no little interest. The greater portion of its sculptures, its columns, cornices, and the central arch, are of earlier date, and refer to the reign of the Emperor Trajan. They are evidently a portion of an earlier building, and are said to have been brought from the triumphal arch which stood at the entrance of Trajan's Forum, while some authorities believe that they are portions of two earlier arches, instead of one. An examination of the earlier parts shows, however, that the design of which they now form a portion could not ever have been very different from what it is at present. The eight columns, four on each side, the sculptures over the side arches, the arrangement of the cornice, formed of the more ancient work, all point to a design as wide, at any rate, as the present, and all referring to the Emperor Trajan. These portions are mixed up and eked out with the portions of more recent and poorer work, which have been referred to, relating to the Emperor Constantine. Broad pilasters have been added to caps too narrow for them, bases have been cut down to accommodate them to other plinths, and other works of alteration are apparent here and there. The occurrence of so much original work is, however, sufficient to give good reason for the belief that the great bulk of the arch is, in fact, that of the Emperor Trajan in its proper position, and that the interpolation of the later work was but as a matter of repair, and to adapt it for use for the triumph of Constantine on its being rebuilt on its present position. The inscription, too, does not preclude the belief that other processions may have passed beneath it, prior to that of Constantine himself. This monument, the first erected after the conversion of the Empire to Christianity,—erected to commemorate the miraculous victory rendered to him over Maxentius,—is remarkable from the fact that neither the cross nor the Labarum, the sacred sign said to have been seen by Constantine in the heavens, and which he accepted as the presage of victory, does not appear anywhere among the numerous carvings or devices. This is the more remarkable, since it was so soon after used as a badge for the soldiers of the army, being emblazoned in purple and gold. Although used for the triumph, it must be remembered that this event was a direct infringement of the usual rules of such an honour; for the foe defeated was not a foreign enemy, but the victor's former colleague.

D'Agincourt has drawn an interesting parallel showing the relation of the design and execution of the Arch of Severus to that of Constantine. In the period of time that had elapsed between the erection of the two arches, the condition of Roman art had still further degenerated. The arch of Severus is overloaded with ornament and enriched members, which show a falling off from the elegance and beauty of earlier works, but the Arch of Constantine indicates this to a much greater degree. The mouldings are heavy, and the enriched members, although in as great a number if not more so, have their carvings designed stiffly and executed poorly, much of the work being little more than bossed out. This is all the more apparent from the poor later work being joined to the portions of the arch derived from that of Trajan's. All these latter parts are designed in the best style of Roman art, and executed with extreme grace and elegrance. The imposts of the central arch and the architrave are of this older date, and indicate, by comparison, the poorness of the side arches, which are of the time of Constantine. The fine columns, each being in a single block of beautiful giallo antico marble, delicately fluted, are, with their elaborately-carved caps and bases, of the time of Trajan, but their pedestals, upon which they are mounted, are of the later date.

In like manner, the sculptured figures, the statuary's portion, rather than the architect's, as we should say nowadays, of the arches of Titus, Trajan, Severus, and Constantine, being thus in close proximity, the progress and decline of the art may be traced by so many steps. The work of the two first shows some of the best examples of Roman monumental art; that of the arch of Constantine is of the poorest, although the artists were still ambitious to execute subjects of large size. Contrasted with the Arch of Severus, the beholder cannot but be struck with the purity of the design of the Arch of Constantine, which appears much better in this respect than that of the former arch, and strengthens the belief that it owes more to the time of Trajan than to that of the later Emperor.

There are some other arches still remaining in Rome which demand a certain amount of notice, before undertaking the consideration of some of the buildings of the same class away from the old metropolis of the world.

The Arch of Drusus (see illustration) is a plain semicircle, springing from imposts and pilasters, and flanked by large columns of the Composite order. There is hardly any moulding to the arch, and the keystone, which is pronounced, extends along the soffit from front to back like a ridge. There is a moulded cornice above, the whole being in good plain style, betokening an early date. Above there is now a mass of ancient Roman brickwork, a portion of a later aqueduct which was as unceremoniously carried over it at the later time as is some railway viaduct over existing buildings in this modern nineteenth century among ourselves.

The Arch of Gallienus is not unlike in design that of Drusus, but it is plainer, poorer, wider, and of later date, having plain Corinthian pilasters to form the abutting piers, which are small for the width. The capitals, which are of the Corinthian order, are only bossed out and are not carved. The two side arches have been removed.

The arch called by older antiquaries the Arch of Janus Quadrifons, is a large, singular, four-sided structure, each side resembling the others, and having a bold semicircular arch springing from imposts. The masses of masonry in the angles are decorated with somewhat plain semicircular beaded niches rising tier over tier. There is a bold moulded cornice and an attic, but no inscriptions remain, and the appropriation of the building is still somewhat doubtful.

The Arch of the Goldsmiths is a beautiful structure of small size, covered with elaborate ornament and well-designed sculpture poorly executed, the single opening being only 10 ft. wide. It was erected by the bankers and principal merchants living near the Forum Boarium in honour of the Emperor Severus and Julia his empress. Being of small size the arch form is not used; the opening is covered by a rectangular entablature having a highly-enriched cornice and an inscription. The piers are ornamented with projecting pilasters with composite capitals. One side of the arch is embedded in the side wall of the ancient church of St. Georgio in Velabro.*

* To be continued.

LETTER FROM PARIS.

POSTHUMOUS honours will not be wanting to Théodore Ballu. His name is to be given to a new street in Paris, and in a few days his bust, by Barrias, will be placed at the Hôtel de Ville, on a pedestal decorated with a graceful bronze allegorical figure by M. Coutan. Unfortunately the Municipal Council, while thus honouring the memory of Ballu, are meditating a serious injury to his last and most important work. When the new Hôtel de Ville was raised on the ruins of the old one, Ballu reserved for the sittings of the Municipal Assembly a large hall, richly decorated, in the centre of the administrative buildings on the principal façade. Many political changes have taken place since then, and the Council, from a simple communal assembly, has become a kind of Parliament on a small scale, whose noisy debatings are now held in public, and it is required that the Parisian electors should be able to see and hear their members debate. For this purpose it is proposed to take the apartment known under the name of "Cour Louis XIV.," the original design of which Ballu had carefully retained, and which constitutes one of the most interesting parts of the new edifice, and to cover up its sculptures and porticos with timber galleries, in order to make it a *salle de séances* capable of accommodating a number of spectators.

Instead of this piece of architectural spoliation, which would cost about a million francs, others have suggested installing the new *salle* in the "Cour du Préfet." But 600,000 francs would still be required for this scheme, which would also render it necessary to destroy the fine circular staircase which was Ballu's best work; wiser people suggest a simple gallery or tribune on corbels for the spectators, which would cost little and only disfigure the actual *salle* without injuring the building itself. Apparently, however, the Assembly includes among its members some architects little known to fame who are ambitious to try their hands on Ballu's great building, and financial reasons alone seem to have so far kept their schemes in check. These propositions are the more vexatious because the Hôtel de Ville is at last on the eve of being entirely completed. A few days since, four new statues, representing heralds and archers of the Middle Ages, have been added to one of the two grand entrance doors; four others, pendants to these, will be placed almost immediately; and the *salons de reception*, still awaiting their decorative paintings, have been furnished with mirrors, lustres, and electric lighting instalment at a cost of 450,000 francs. Other matters which the Council has settled before vacation have been the subventions to Paris workmen to visit the exhibitions at London, Edinburgh, and Liverpool, the funds for various road improvements, and those for the completion of the work at the Hôtel Carnavalet. It is intended to open here new galleries of Parisian antiquities, formed within old structures rebuilt here from different parts of Paris. At present the 100,000 francs voted by the Council have sufficed for the rebuilding of the Arc de Nazareth, formerly situated near the Prefecture of Police. This charming remnant of the architecture of the time of Henri II., which, fortunately, escaped the Communal incendiaries, has been transported to the garden of the Carnavalet, where it faces the pavilion "De Choiseul."

Among other operations in connexion with records of old Paris, a marble tablet has been placed in the Rue Française, to commemorate the site of the Theatre of the Hôtel de Bourgogne, which was the cradle of the Comédie Française. The inscription, like all the others of the same kind which have been put up in Paris, has been edited by a committee founded by the Préfet Hérold six years ago, and which is now presided over by M. Leopold Delisle, director of the National Library, with M. Chas. Garnier as vice-president. Thanks to this committee, we have among other things the outline of the plan of the ancient Bastille, actually marked out on the ground in its precise position; and everywhere in Paris we find inscriptions, informing the public as to great events which have taken place at this or that spot; thus providing a kind of course of popular history open to all. We may also mention here, in connexion with the same branch of Governmental work, some new works of art which are soon to adorn the public promenades of Paris. M. Boisseau's group, the "Défense du Foyer," purchased from the *Salon* of 1884, is to be placed in the park of the Champ de Mars, opposite M. Noël's group of combatants purchased from the 1883 *Salon*. M. Coutan's "Porteuse de Pain" will go to the Square of St. Jacques la Boucherie; "Le Ferraison" of M. Baran is intended for the Square St. Médard; "L'Aveugle" and "Le Paralytique," by M. Michel, will be placed in the Square de Belleville, while the "Jeune Faune," by M. Charpentier, will be placed in the Parc Monceau. The "Marat" of M. Baffier, a coarse piece of work, purchased much more for political than artistic reasons, will find place in the Parc de Montsouris, along with the "Bâton de Vieillesse" of M. Escoula. M. Rolard's "Sauvé" will go to the Buttes Chaumont Park, along with "Le Gué" of M. Lefèvre, "L'Abandonnée" of M. Vital Cornu, and the "Au Loup" of M. Hiollin. Lastly, the "Circé" of M. Michel, purchased from the last *Salon*, will be placed in the Square des Batignolles.* We regret to add to the list the name of M. Captier's vulgar production "L'Égalitaire," which merely symbolises anarchy and ferocity. It is a piece of the worst sort of impressionism, and will probably, when placed in its public

* A list of State-purchased works to be read with envy by English sculptors, with shame by an English Government.—ED.

position, be estimated at its proper value, even by popular taste. This reminds one, in passing, of the exhibition of "independent artists" which has just opened its doors. If there is little talent or originality here there is at least entire good faith and honesty, but the collection of works might be very well described as a "Salon des Refusés." The independents, so called because they profess to care neither for the State nor for the jury of admission as judges of their work, are, in fact, so exceedingly independent that criticism is entirely disarmed before this array of audacious improvisations.

In the last number of the *Builder* mention was made of the demolition of the monument to the defenders of Paris, on the plateau of Chatillon, the inscription on which was given in our issue for March 27th last (p. 466). This affair has caused a good deal of public feeling, and the Parisian population, always reverential towards the dead, has been a good deal shocked at learning that the State has sold this site to a private purchaser. The motives of this proceeding, with which the Ministry of War has had nothing to do, are unknown, but at present the fragments of the monument are at the side of the road, and no one knows when they are to be put up again. The carelessness of the Administration under the circumstances has been the subject of much comment.

All the French architects, especially those who are officially connected with the Government, have heard with much regret of the retirement, on account of advanced age, of M. Poulin, "Directeur des Bâtiments Civils" to the Ministry of Fine Arts. He was as remarkable for courtesy as for ability in his office, and had none but friends among the architects, and the best wish that can be given to his successor, M. Jules Comte, is that he may find the same general popularity among the Profession.

The partial suppression of the Paris fortifications, which was demanded not only by public opinion, but by the Municipal Administration, and approved by the Minister of War, has received a check. The "Comité de Défense Militaire" has strongly opposed the project of M. Alphand, which has been negatived by fourteen votes against three, in spite of the efforts of General Boulanger and the Governor of Paris.

We can now complete the information we have already given in regard to the sculpture decoration of the New Sorbonne. Besides the two alto-reliefs entrusted to MM. Chapu and Mercié, and which symbolise "Les Lettres" and "Les Sciences," M. Falguière will personify "Science" in the features of Archimedes, and M. Delaplanche will represent "Literature" under the guise of Homer. M. Crank will execute the statue of Robert Sorbon, the founder, and M. A. Lanson that of Richelieu; M. Coutan will undertake the statue of Descartes, and M. Barrias that of Pascal; M. Chaplin that of Rollin; M. Dalou, that of Lavoisier; M. Allar, the University of France; M. Delhomme, that of the Republic,—a subject, it must be admitted, very difficult to translate into a work of sculpture.

The organisation of the work for the 1889 Exhibition is now complete, and the commencement of the work is fixed for September 4th. There is some talk of celebrating the laying of the first stone of the construction by some kind of ceremony.

M. Alphand has already chosen as his principal assistants in the work M. Bonvard (City Architect) and MM. Formigé and Dutert, authors of two of the premiated designs, and M. Bartes, engineer-in-chief "des promenades et de l'éclairage." M. Dutert has received instructions to construct the large "Galerie des Machines" on the side of the École Militaire. M. Formigé is to take in hand the Fine Arts Palace, forming the principal façade, and in front of which the 300-mètre tower is to be erected. The construction of the two pavilions of the French and Foreign Sections is entrusted to M. Bonvard; and M. Bartes will overlook the laying-out of the gardens and plantations in connexion with the Exhibition. The *Journal Officiel* publishes, on its part, the official code of regulations for the Exhibition, drawn up by M. Lockroy, who has appointed a Special Commission to oversee the preparations for the International Fine Art collection in connexion with the Exhibition. The Commission is composed of twenty-three members, architecture being represented by MM. Bailly and Questel.

By the time these words appear, Paris will have celebrated the centenary of the illustrious Chevreul. Without going into the details of the fête, we may mention the fine statue of the venerable *savant* which has been modelled in clay by M. Guillaume, and provisionally inaugurated on August 31 in the great Salle de Museum recently built from the designs of M. André, the architect. At this same ceremony the President of the Municipal Council presented M. Chevreul with a large gold medal, bearing on the obverse a design by M. Daniel Dupuis representing the Union of the Republic and the City of Paris, and on the reverse an inscription recording the circumstances under which it was presented. We prefer, however, another medal which was struck for the occasion, executed by M. Roty, representing a draped antique female figure offering a palm-branch to the eminent *savant*; this medal was offered in the name of "La Jeunesse Française."

We ought to mention, in conclusion, the preparations which are being made at the Louvre, to accommodate the interesting and curious collection brought from Persia by M. Dieulafoy, after five years of laborious research, made often amid circumstances of considerable danger. The Direction des Beaux Arts hopes to open soon to the public the gallery in which will be exhibited the fragments from the palaces of Artaxerxes and Darius, which constitute extremely curious specimens of that Persian architecture of which so little now remains to us.

THE EPISCOPAL HERALDRY OF SCOTLAND.

THE arms of the Sees north of the Tweed lack that spirit of antiquity and tradition which enters so largely into the heraldry of the Southern Bishoprics.

The greater part of them have been assumed subsequently to the Reformation, and the continuity has been repeatedly broken by successive occupiers of the Sees varying their seals at pleasure, and thus destroying in a large measure that feeling of interest attaching to "old coats"; and Woodward records those of St. Andrews, Edinburgh, Galloway, Ross, and Argyll, as the only ones that have been properly recorded by the Lyon King-at-Arms.

The See of Edinburgh owes its existence to Charles I., its founder, in 1633. The arms are, "Azure: a saltire argent, in the centre chief point a mitre of the last garnished or," being the old national insignia of Scotland differenced with the mitre.

We cannot expect much historic lore surrounding such a comparatively recent creation as this, and perhaps it is with a feeling of disappointment that we pass on so quickly from "Auld Reikie's" cathedral to one of more ancient foundation.

The See of St. Andrews dates from the very earliest introduction of Christianity into Scotland, and was ushered in with a grand old legend of some bones of its patron saint being brought by a Greek monk from Patræ (in accordance with a vision) in a ship that was driven ashore near the present site of the city which bears the name of St. Andrews, and hence arose the cathedral, and at the same time Scotia's national emblem.

The arms of the See are simple, as becomes the first of Scotland's churches, and the blazonry is brevity itself in all its dignity: "Azure: a saltire argent," the shortest, and at the same time, most truly national specimen of episcopal blazonry that is to be met with, being nothing less than the badge of the realm.

We would mention here that the cross of St. Andrew, conjoined with those of St. George and St. Patrick, forms the far-famed "Union Jack of Old England," first incorporated on the accession of James to the throne of Elizabeth.

In the year 1472 St. Andrews was made an archbishopric, and in 1842 became united with the Sees of Dunkeld and Dunblane.

The Bishopric of Dunkeld was made a See by David I., and the arms generally attributed to it are singularly appropriate for such a purpose, being, "Argent: a cross of Calvary, sable, between two passion nails gules." According to Parker's "Glossary," a cross of Calvary is a passion (or true) cross elevated upon three steps, which, it is said, are symbolical of the three Christian graces, Faith, Hope, and Charity.

Dunblane is believed to have been founded by the same monarch, and its arms were, "Argent: a cross of St. Andrew, engrailed azure," thus reversing the colours borne by Edinburgh and St. Andrews.

Aberdeen and Orkney form another united See, and the heraldry usually associated with it is of a very remarkable character, "Azure: a temple argent, in the porch thereof St. Nicholas standing mitred and vested, with his right arms extended over three naked children in a boiling cauldron, all proper."

Nicholas is looked upon as the protector of sailors and the patron of schoolboys, and the three children depicted above refer to the Saint discovering them prepared for food during a dreadful famine, and restoring their mutilated remains to life. He was greatly esteemed south of the Tweed, especially in seaport towns; and Parker records that 372 of our churches bear his name.

The arms of the See of Glasgow are also of a very remarkable nature, and their blazonry is a long one, "Argent: in base a tree growing out of a mount vert, pendent from a branch; on sinister side a bell or, and in chief a robin proper; above the mount a salmon fessewise on his back of the last, and in his mouth an annulet of the third (for Glasgow) impaling argent. St. Ninian, pontificially habited, purpure, on his head a mitre, and in his dexter hand a crosier, both or" (for Galloway). The figure of the fish refers (says Woodward) to a legend of a lady losing her ring, and its marvellous recovery by St. Kentigern,—by whom the cathedral is said to have been founded somewhere about the close of the sixth century.

The robin (says the same authority) refers to another legend about the Saint, who is said to have restored to life the pet bird of St. Serf after its head had been torn off.

Moule thinks the salmon may refer to the produce of the Clyde, and that the ring is perhaps a type of the annular money current among the Britons.

Dr. Doran throws cold water upon the many interpretations that have been given to account for the strange combination of figures in these arms of Glasgow city and See (for they belong to both), but unfortunately without giving any theory of his own, and at this we leave the vexed question, simply adding that the fish and ring story is a universal one, and current in many tongues.

The See of Galloway is suffragan to that of Glasgow, and hence its arms appear on the sinister side of the shield: they call for little notice; the figure of St. Ninian is that of its founder in the fifth century.

The arms of the See of Brechin are those borne by the Wisharts (who were formerly lords of the place) and contain nothing episcopal, being simply "Argent, three piles meeting in base gules." The pile as a figure in heraldry is of unknown origin (as many of its figures are), but Lower suggests that it may represent the skin of an animal worn over a man's shoulders with the head-part downwards, after the fashion of our ancestors; its true shape is wedge-like. Brechin became a bishop's seat about the middle of the twelfth century, and the old Abbey of the Culdees, with its quaint round tower, was used for the cathedral.

The union of Argyll and the Isles was accomplished in 1845: the latter included the Isle of Man until its conquest by the English, when the connexion was severed, and the Hebrides alone remained to Scotland as "The See of the Isles." The arms of the united See are "Azure: two croziers in saltire surmounted by a mitre or (for Argyll) impaling azure; in base, on waves of the sea, St. Columba praying in a coracle proper; in dexter chief a star or." We may dismiss those on the dexter as a church coat of the conventional type, but the figure of St. Columba (and the star) is very expressive and beautiful as the original founder of the See, which was destined to become such a centre of light and influence amongst the surrounding waste.

Moray, Ross, and Caithness form a united See; the foundation of the latter is a matter of doubt, but Moray is believed to have been created in 1115 by Alexander I., while Ross is supposed to date from the early part of the thirteenth century.

The arms of this triple See are, "Per fesse, in chief per pale dexter azure, Saint Giles standing within the porch of a church mitred and holding within his dexter hand a passion cross, in the sinister a book, all proper" (for Moray). "Sinister argent, Saint Boniface proper habited gules, and a bishop vested purpure, with mitre and pastoral staff or" (for Ross). "In

base, azure, a crown of thorns or, between three saltires couped of the last," for Caithness.

These devices speak for themselves, and form a befitting shield for the purpose, but there is nothing of special interest about it that we are aware of. St. Giles will be remembered as the patron of all cripples, and Boniface as the apostle of Germany, where he suffered martyrdom in his seventy-fifth year.

As we have already remarked, Scotland is not so rich in her heraldic associations as England, nor does the halo of antiquity so much enshrine them. Her bishops, through their unswerving allegiance to the Stuart dynasty, incurred the censure of William III. of Orange, who abolished the episcopacy they represented; but in spite of this the spirit of succession was not entirely suppressed in them, and in a mutilated form the Sees have held their own down to the present day, fourteen in number.

PHARAOH'S HOUSE IN TAPHANES, AND THE RELICS DISCOVERED THERE.

THE remarkable discovery made by Mr. Flinders Petrie of the remains of "Pharaoh's House in Taphanes," to use the title given in the Book of Jeremiah, will not soon be forgotten, announced as it was in the *Times* of the 18th of June last, by one of the most graphic of narratives. The interest so widely excited by the importance of the remains brought to light, and by the illustration they render to the Biblical story, is about to have additional gratification by the exhibition of a mass of the relics found on the actual spot during the excavations made by the painstaking and enthusiastic discoverer.

Under the auspices of the Egyptian Exploration Fund, in rooms at Oxford Mansions, Regent-circus, kindly lent by the Royal Archæological Institute for the purpose on Tuesdays, Thursdays, and Saturdays during the hours of ten and four, for some time to come the objects found will be on view to any lady or gentleman presenting an address card. A private view has just been held, and the objects are already fairly well arranged. Let not a casual observer, however, expect a sight remarkable to the eye. On the contrary, he will notice only a moderate-sized room filled to overflowing with a mass of broken pottery and antiquities of moderate dimensions securely placed in glass cases. A closer inspection will show that the fictile ware and many of the other relics command, and deserve to command, the closest attention that can be bestowed upon them, for they are of types hitherto unknown. The collection will be best understood by the inspection of a ground-plan prepared by Mr. Petrie, which shows clearly the position of what must have been the great square tower-like building forming the palace proper. Only the substructure remains, showing that the square cell-like compartments had been vaulted over to raise the level of the better apartments well above the level of the plain, the material being sun-dried bricks. This main building was enclosed by a huge wall, forming a parallelogram about three furlongs in length by nearly a quarter of a mile along the smallest side. This inclosed the courtyard, where, leading up to the entrance, according to Eastern usage, was the brickwork pavement, "the brickwork which is at the entry of Pharaoh's house in Taphanes," again to quote Jeremiah.

Sufficient of this pavement remains in position to enable Mr. Petrie to lay its extent down on plan, and to show the exact accord of the Biblical narrative with the actual remains. The plan indicates the direction of the canal, the fresh-water lake, and the position of Lake Menzaleh, of the military camp between the palace and the latter, and of the town on the opposite side, between the palace and the fresh-water lake. A small sketch shows how completely the huge mass of brickwork forming the remains was buried beneath the Mound of Tell Defenneh, which was alone visible to the explorer when he first beheld it "standing high against a lurid sky and reddened by a fiery sunset," when he arrived at it footsore and weary at the end of a long journey.

One of the most interesting groups of objects found are those from the foundation angles. There are small blocks of the four precious metals,—gold, silver, lead, and copper; corn rubbers, some of the bones of a bull offered as a sacrifice when the deposit was laid, and of the sacrificial vessel. Also the cartouche of Psammetichus, who built the palace about the year B.C. 666. Under the foundation angle of another and later building a deposit of charcoal and pigeons' bones was met with. Among the mass of pottery there are several amphoræ of large size, perfect, or nearly so; one, in particular, measures about 5 ft. in height. Others are of interesting and curious forms, resembling Greek work, although found in Egypt. The finding of clear traces of Greek potters' work was one of the results of Mr. Petrie's discovery of the site of Naucratis. Here, again, there is ample evidence that the pottery found in such abundance on this newly-excavated site was also the work of Greeks, for on many of the vessels Greek characters are inscribed.

Some of these are scratched on the surface, and indicate that Greeks lived at Tell Defenneh, but those referred to were made on the clay before baking, and are clearly the marks of the potters. While many thousands of fragments of pottery have been found, it is a remarkable fact that only a few solitary pieces correspond with the Greek pottery found at Naucratis, the character of the works of the two sites being remarkably different, although both are Greek.

The amphoræ have contained wine, and great care has been used in the securing of the contents. First of all a bung of pottery was inserted. This was covered with plaster, then with muslin, for its pattern remains on the plaster; then it was corded and sealed with the seals of six inspectors. Finally it was all plastered over and marked with the seal of the king. The names of Psammetichus I., Necho, Psammetichus II., and some others have thus been noted. One of these amphoræ has, however, been tampered with, by a bored hole through bung and plaster alike, the latter being covered by a clever interpolation, which is not sufficient to show us 2,400 years afterwards of the theft then committed.

Apart from the pottery, the cases are filled with bronzes, which reach to a late date. Here is a neat little bolt for a cabinet, with a hinge, nails, chisels large and small; swivel rings, probably portion of horse trappings; some very neatly-worked arrow-heads, also of bronze; others of leaf pattern. A draught-board of clay requires notice. The squares are roughly marked out in rows of three, ten times repeated. The draughtsmen are rough patches of baked clay. Another draught-board has been roughly marked out on an earthenware plate. Two or three pieces of iron scale armour have been found, of very neat workmanship, of six thicknesses of metal overlapping. The iron implements consist of swords, leaf-shaped knives, an auger, and such like. A few gold ornaments are also exhibited.

Mr. Petrie's former discovery, the unearthing of Naucratis, derives additional interest from the exhibition now of many other relics found at Tell Nebesheh. Here, for the first time, we can trace on the plan exhibited the form of an ancient Egyptian town. The buildings are enclosed within squares of walls separated by narrow streets, each square containing many apartments opening from a courtyard in apparently every case, there being but little attempt at arrangement of the squares, or uniformity of size. The deposit met with at the foundation of the south-west corner of the Temple of Uati consists of limestone, gold, and silver, copper and lead, carnetian and lapis lazuli. Above these was a curious deposit of small models of vases. One of the most recent discoveries here comes from the cemetery. The pottery in one spot is of Cypriote form, identical with what is so familiar to us in the Cesnola collection. Bronze lance-heads and lance-rests are found in abundance on the same spot. Was this a cemetery of Cypriote mercenaries? In any case, it must have been a deposit of great antiquity, for it is cut through by a tomb of the twenty-sixth dynasty.

Opening of a New Public School in Dundee.—Rosebank public school, the latest addition to the school buildings in Dundee, was formally opened by the members of the School Board on Tuesday. Rosebank school, which has accommodation for 1,085 scholars, was built from designs by the late Mr. Ireland, and the plans were so much admired that Mr. Robson, architect to the Education Department, asked permission to take a copy of them to serve as a model for the guidance of other School Boards.

FORESTS AND FOREST CULTURE IN SWEDEN.

IN view of the inquiry which is now in progress in this country, as to the establishment of a school of forestry similar to those which exist in other countries, and the best means to be adopted for the preservation and planting of forests, it may be of interest to note what is done in this direction in a great timber-producing country like Sweden. There is in that country an excellent school of forestry, on German principles, and also a Government board for the protection of the Crown forests, with a whole army of foresters, rangers, &c., located throughout the land. And this body of men does not consist of woodcutters and lumbermen, but of gentlemen of education and high standing. That this service, which is far from remunerative, should attract such men is firstly due to the circumstance that the forester, or as he is styled in Sweden, *herr forstcandidaten* (*i.e.*, a forester who has passed his examination), is an official of standing in the district in which he resides, ranking among the Government authorities and the gentry; and secondly, that a free and unfettered life in the enormous fir forests of Sweden, teeming with game, has an indescribable charm to many. The Crown forests are divided into "reviers," each being administered by a staff of foresters, who report upon the state of the forests, the prices ruling for timber, &c., to the head office. It is also their duty to mark out once a year those trees which are considered mature for cutting, and report their number to the Government Office. This done, the foresters receive orders to invite tenders for, or hold an auction over, a certain number of trees, the quantity being naturally guided by the prices ruling, and these trees are subsequently sold "on the roots," *i.e*, in the ground, the purchasers undertaking the removal. During somewhat recent years, however, the thinning, and, in fact, entire clearing of forests, has become so serious that laws have had to be enacted, that a certain portion of the ground cleared shall be replanted, branches removed, &c.; but it is clear that this can only be partially effected in a country so rocky as Sweden. The re-planting is very laborious and expensive, as it takes up such a great deal of time. But in order to save all expense, and, what is equally important, to give the rising generation of peasants an interest in the forests and their protection, and an idea of their beneficial influence on the climate, the Society for the Promotion of Arboriculture,—a semi-Government association,—has, with the sanction of the authorities, hit upon the brilliant idea of using the school-board children in the country to plant. It is obvious that the undertaking is both instructive and healthy, and affords great amusement and rivalry among the children, and it has been crowned with the greatest success. The young trees are supplied by the nurseries belonging to the society, there being as many as a hundred such in some counties, and forwarded to the schools, when certain hours,—at the discretion of the teacher,—are employed by the children in planting them under proper directions. As an example of what may be done in this manner, it may be mentioned that in the province of Södermania (where the Prince of Wales hunted the elk last autumn) nearly 3,000 school-board children were engaged in this pursuit last summer, and thus learning to all intents and purposes practical forest-culture, the result being the planting of some 200 acres of cleared land with young fir, spruce, and larch trees. In addition to this work, 12 lb. of seed of these species of trees were collected, which were purchased by the society. The result has been equally satisfactory in other provinces. We referred above to the branches of the trees, and these have really more to do than waste and reckless clearing with the gradual extermination of the Swedish forests; for when trees, as is mostly the case, are cut in remote and almost inaccessible parts, the branches have to be hewn off, as they cannot be removed without great expense. These are left to cover the ground, which entirely arrests the growth of the young trees underneath. To this contributes also, naturally, the dragging of the trees through the forests, the tramping of horses and men, &c.; but how this is to be avoided in a country like Sweden it is difficult to say. With regard to the growth of the planted trees,—apart from

Cottage at Entrance to Churchyard, Penshurst, Kent.—Sketched by Mr. G. Ashburner.

the circumstance that, naturally, a great many die,—Sweden might furnish some interesting and important information to the Commission which is now dealing with this subject in this country, as the climatic conditions of the two countries are at less variance than that of England and any other forest-growing Continental country. Thus, it has been found in Sweden,—but, of course, a very wide margin must be allowed for local conditions in coming to any such conclusion,—that a naturally-grown fir or spruce tree, in fair position, takes from twenty-five to thirty years to mature, *i.e.*, say, being 30 ft. in height, and having a diameter at 2 ft. from the ground of 2 ft. to 2 ft. 6 in. An oak or beech tree would take from thirty to fifty years. A cultivated fir, spruce, or oak would, on the other hand, take twice as many years to reach the same dimensions; in fact, it may be doubted whether firs or spruces planted in Sweden this century have as yet reached maturity. It is, therefore, evident that man has but little chance against Nature in this field when once her laws have been violated.

Finally, it may be mentioned, in order to show the timber wealth of Sweden, that the country possesses at present some 105,000 square miles of forests, of which a seventh part belongs to the Crown. The revenue from the latter was in 1884, 1,120,000*l.*, having risen from 750,000*l.* in 1880, and 890,000*l.* in 1882. Last year it is estimated as slightly less than in 1884.

Illustrations.

THE NEW FRESCO AT THE SOUTH KENSINGTON MUSEUM.

WE give this week an illustration of this important decorative wall painting by Sir F. Leighton, to which we have already referred in the last number of the *Builder*.

The general idea of the painting evidently is that the industrial arts in times of peace are mainly dedicated to the use and adornment of the fairer half of mankind, who thus form the centre of the picture and are ministered to by the labours of the men. In the opposite fresco, where the industrial arts are applied to war, the women work for the men; in the times of peace the men work for the women. This view does not, indeed, cover the whole meaning of the design; industrial art applied to the theatre, for instance, is suggested by the masks seen hanging over the door on the right. Other manufactures suggested are robes, carpets, textile fabrics generally, jewellery, pottery, bronzes, &c.

We should add that the title, "The Arts of Peace," is not that intended by the painter, whose title for his picture is "Industrial Art applied to Peace," in contradistinction to the other fresco, "Industrial Art applied to War." This is more intelligible than "The Arts of Peace," which is a very unmeaning title; though we may observe that "art applied to peace" is not quite a parallel expression with "applied to war," since "war" implies an action or series of actions in a sense in which "peace" does not: swords and spears are useful in the prosecution of war, but we cannot say textiles and bronzes are useful in the prosecution of peace. We should, however, have given Sir F. Leighton's own title had we received his disclaimer of the other in time; but we received an invitation card to the private view with the title, "The Arts of Peace," in very large capitals; and if the South Kensington authorities cannot give the right name to their own picture it is no fault of ours.

REREDOS, PLYMPTON ST. MARY CHURCH, DEVON.

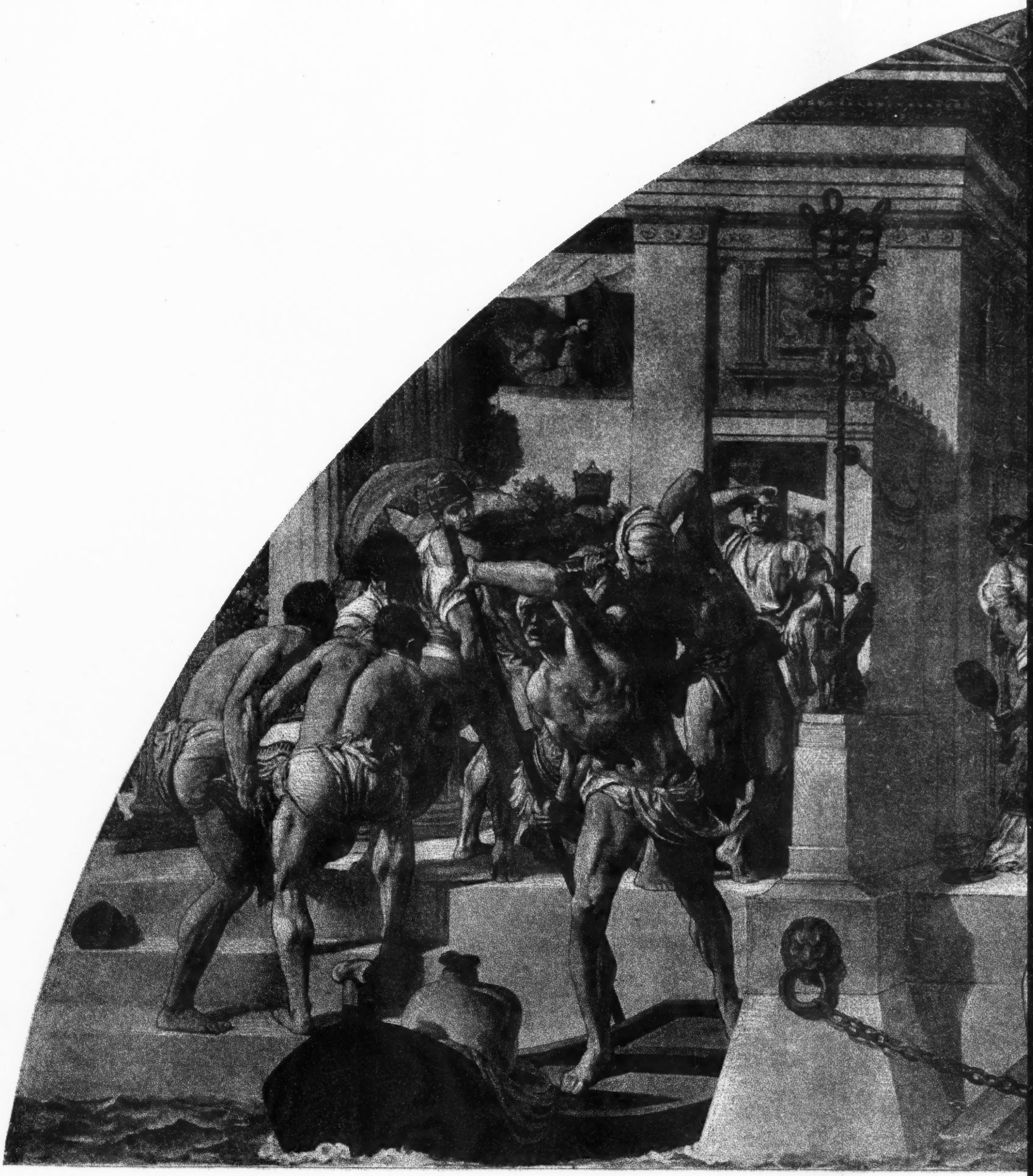
THE accompanying illustration of a reredos recently placed in Plympton St. Mary Church, Devon, represents a memorial erected to the Rev. Merton Smith by his brothers, the Rev. Oswald Smith and Mr. Jason Smith. Mr. Merton Smith was killed by accidentally slipping down some rocks near Eaux Bonnes, in the Pyrenees, and his body was not recovered until some twelve months after the accident had occurred.

The reredos is of three compartments. The centre has a recessed niche for the altar cross. The two sides have as subjects, the Adoration of the Shepherds and the Entombment. The upright panels which divide the reredos into compartments contain figures of angels in low relief. The angels looking on at the Adoration of the Shepherds are singing and playing instruments of music. Those looking on at the Entombment are sorrowful, and carry in their hands the instruments of the Passion. The upper part of the reredos is projected forward, and has panels containing busts of prophets holding scrolls, with prophecies referring to the birth and death of the Saviour. The cornice is of rich open work.

The reredos is constructed of red Mansfield stone; the carved panels are of Caen stone. At the sides of the reredos the church wall is lined with alabaster panels.

The architect from whose designs the work is executed is Mr. J. D. Sedding, of London. Mr. G. W. Seale, of Brixton, is the sculptor.

An International Exhibition at Saltaire. Simultaneously with the projected exhibitions at Manchester and Newcastle next year there is to be an international exhibition held at Saltaire, in Yorkshire, the seat of the alpaca industry introduced into this country by the late Sir Titus Salt. It is being organised by the Governors of the Salt Schools, which consist of the Institute, Art and Science Schools now in course of erection, and boys' and girls' high schools. The present buildings of the trust, costing over 40,000*l.*, were presented to the township of Shipley by Sir Titus Salt, and the new Art and Science Schools are to form a memorial to Sir Titus Salt, and will cost 10,000*l.* The buildings are to be supplemented by temporary annexes, and the whole will provide 110,000 square feet of superficial area, the permanent buildings containing 50,000 ft. of floor space. Pleasure-grounds and gardens are to be added, and also a spacious concert-room. The objects of the exhibition are to assist in defraying the cost of the new schools, to promote the general work of the Salt schools, and at the same time to give the people of Yorkshire an opportunity of studying examples of the best work achieved in art, science, and general industry. There are to be no fewer than eighteen sections or classes.



"THE ARTS OF PEACE;" WALL PAINTING IN "SPIRIT FRESCO," AT THE SOUTH KENSINGTON MUSEUM.

By Sir F. Leighton, Bart., P.R.A.

"INK-PHOTO," SPRAGUE & Cº 22, MARTINS LANE, CANNON ST, LONDON, E.C.

C. HESSE, LEIPZIG.

REREDOS, PLYMPTON ST. MARY

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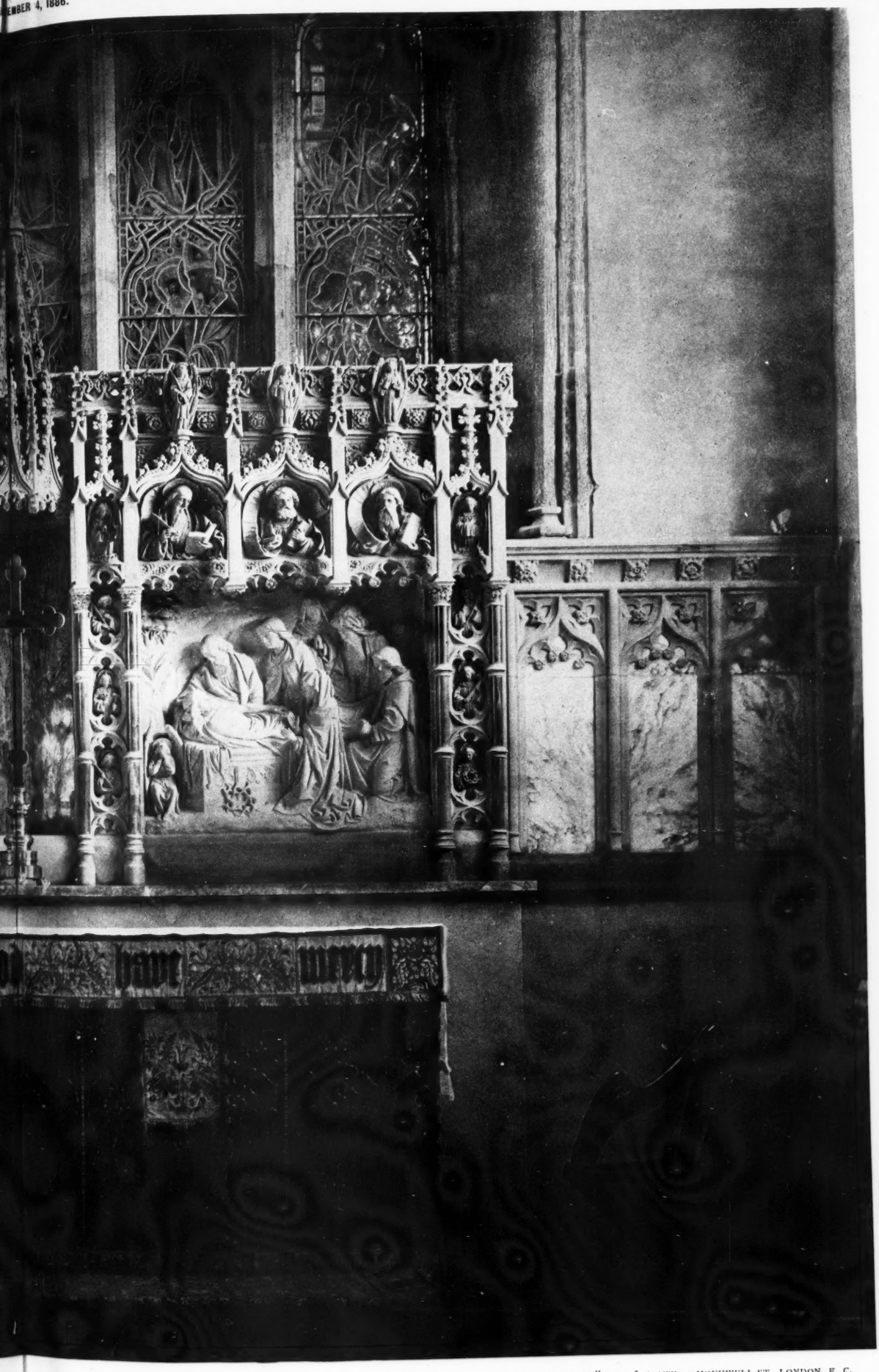
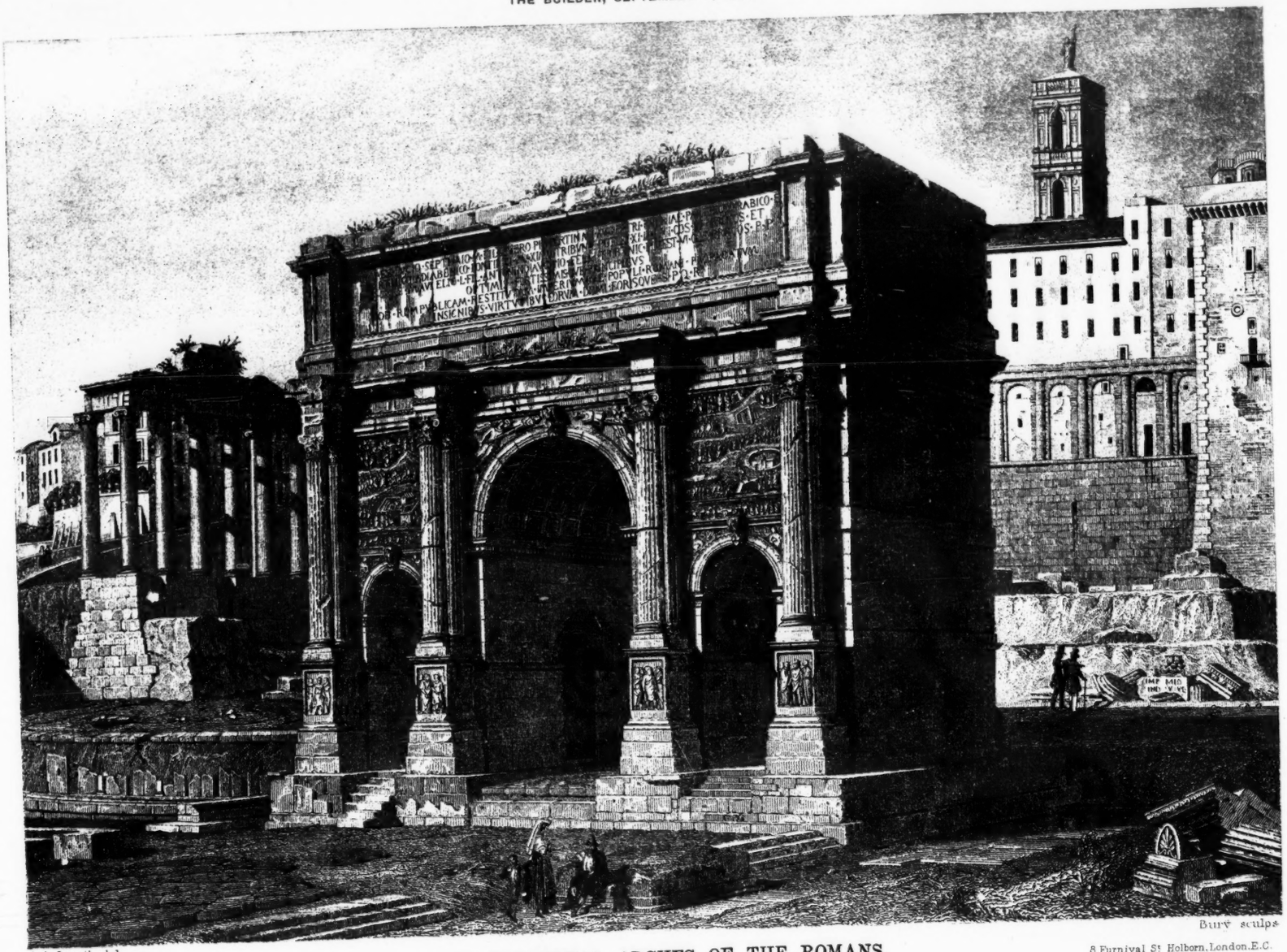


"PHOTOSIMILE" HILL & COMPY. 9 MONKWELL ST. LONDON, E. C.

ST. MARY CHURCH, DEVON.

Mr. JOHN D. SEDDING, F.R.I.B.A., ARCHITECT.



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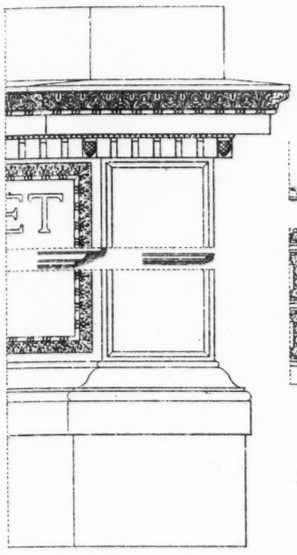
THE TRIUMPHAL ARCHES OF THE ROMANS.

Arch of Septimius Severus.

From Gailhabaud's "Monuments Anciens et Modernes."

Fig. 5



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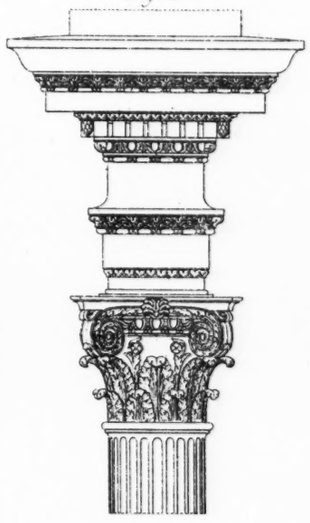

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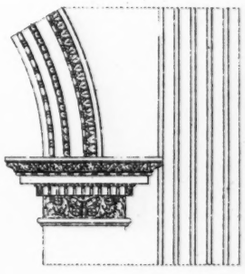

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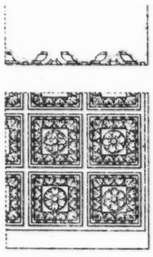

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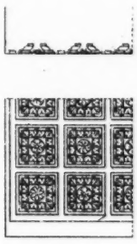

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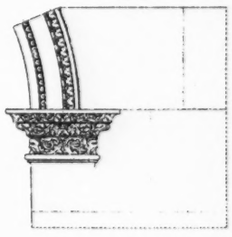

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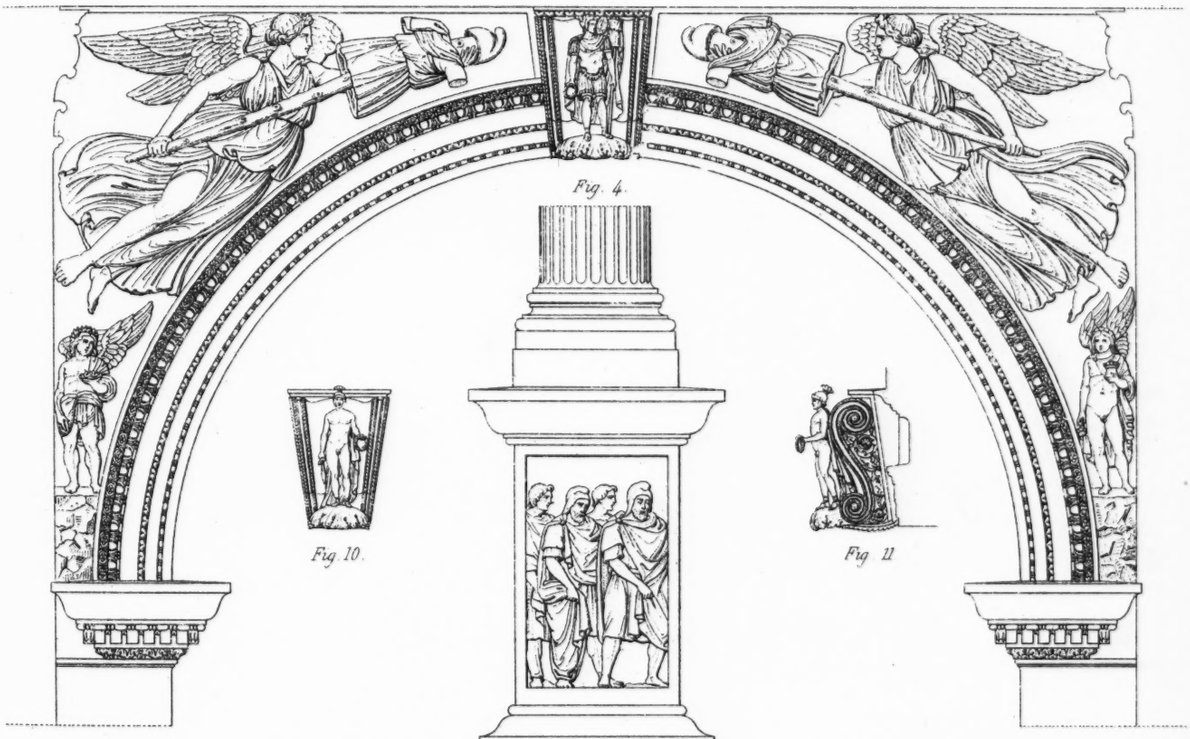

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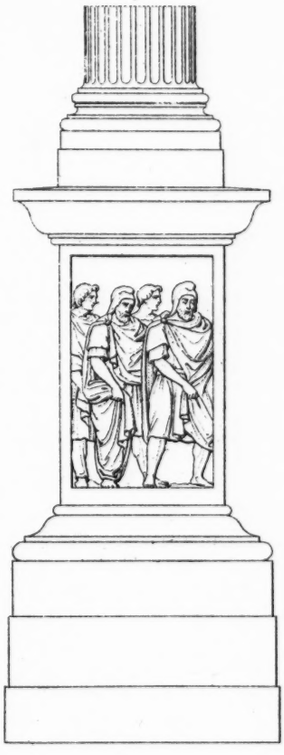

Fig. 10.

Fig. 11

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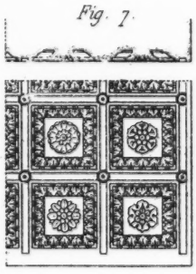

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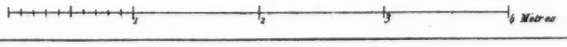

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THE TRIUMPHAL ARCHES OF THE ROMANS.

Details, Arch of Septimius Severus.

From an Engraving by Rossini.

8.Furnival St Holborn, London.E.C.

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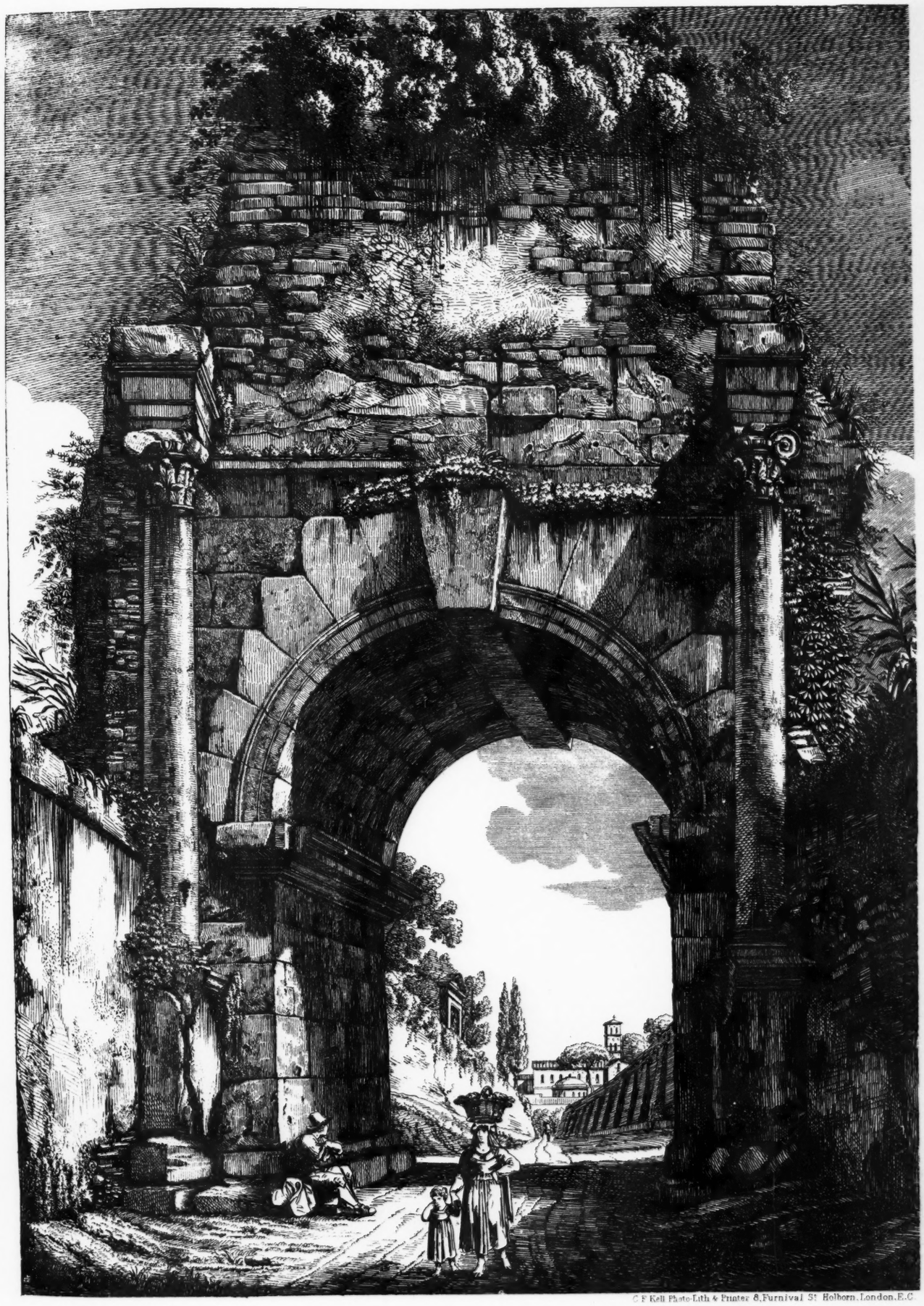
THE TRIUMPHAL ARCHES OF THE ROMANS.

The Arch of Titus: as it appeared previous to 1824.

From an Engraving by Rossini.



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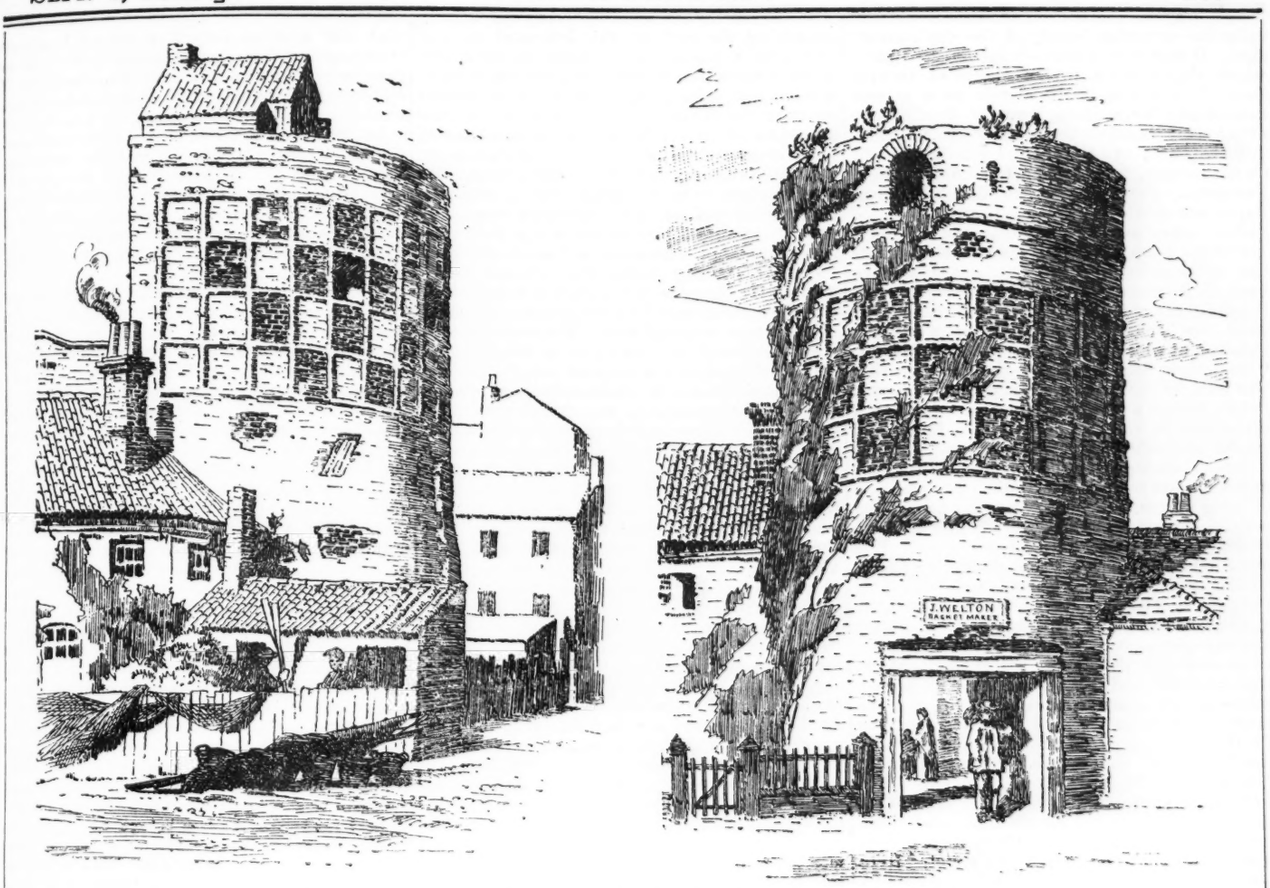
THE TRIUMPHAL ARCHES OF THE ROMANS.

The Arch of Drusus

From an Engraving by Rossini.



Towers on the Old Wall, Great Yarmouth.—Sketched by Mr. G. Ashburner.

CAMBRIAN ARCHÆOLOGICAL ASSOCIATION.*

On Wednesday morning in last week about 100 of the members met in front of the Royal Institution, Swansea, and took their seats in carriages of all descriptions for an excursion into North Gower. This time the exit from Swansea was on the western side, and showed a strange contrast to that traversed on the previous day on the road to Margam Abbey. Roads shaded by well-grown trees, and lined with smooth shaven lawns gay with flowers, replaced colliers' cottages and their grimy surroundings. Why is it that towns always turn their seamy sides to the east? Soon after passing the suburbs of Swansea, Fairwood Common was reached,—a tract of moorland some seven miles in length, on which large numbers of semi-wild Welsh ponies are bred. At the further end of this waste land the visitors were met by the Rev. J. D. Davies, author of "The History of West Gower," and conducted by him to the remains of a tumulus, interesting as marking the locality of an early church, named Llanpencrug, concerning which edifice a dire dispute took place in the sixth century between Odoceus, bishop of Llandaff, and Bivan, abbot of Llantwit, which controversy ended in favour of the bishop. As this tumulus still bears the name of Penycrug, Mr. Davies has no doubt that the church of Llanpencrug stood in its immediate vicinity, but as no remains of the sacred edifice exist all the visitors saw was the base of a round or bronze-age tump, which had been dug into and otherwise misused by many generations. On leaving Penycrug the carriages took a road somewhat to the northward, and the first object of interest that presented itself was a large and apparently perfect earthwork crowning a hill to the right. Then a stretch of seascape opened in front, bounded in the extreme distance by the Carmarthenshire hills near Langharne, while the towns of Llanelly and Pembury occupied the middle distance. The carriages shortly afterwards pulled up on the top of a hill, down which runs a lane leading to Llanrhidian village, where the excursionists were met by the President, Mr. Llewelyn, and Lord Cawdor, who had driven with him from Penllergare. The party went into a cottage garden, to see a thirteenth-century grave-stone. As was not unusual at that period, only the head of the deceased was represented on the stone. A rubbing of some slight remains of lettering was taken by the Rev. Trevor Owen; but as the stone had been employed as a door-step, the inscription was almost obliterated. As worked stones not unfrequently turn up in the adjacent garden, it seems likely that a church of some description once occupied this spot. Immediately below the cottage containing the grave-stone is a sort of village green, on which are two stones. The lower one appears to be a menhîr, which, having been overthrown perhaps by iconoclastic early Christians, was re-erected by the vicar about forty years ago. The upper stone has even a more curious history. It is the portion of the shaft of a very fine wheel cross, which has been jammed into a crevice of the natural rock. A slight portion of the lower part of the wheel remains, and this was used as a pillory within the memory of man, the offenders being secured by a chain which was fixed to two iron staples still remaining. Having examined these curious stones, the party turned into the churchyard. Mr. Freeman, in a paper written some years ago, observes that in the south-eastern portion of Gower, where English place-names abound, the church towers are embattled, but in the north-western division of the peninsula, in which the villagers retain their Kymric nomenclature, the church towers are saddle-backed in both districts; the rule is proved by a solitary exception in the south. The Ilston tower bears a saddle-back; in the north this church of Llanrhidian has an embattled square tower. In the churchyard on the southern side of the church lies a huge block of stone partially buried in the hill, and which is elaborately carved on one face. The side next the hill is hollowed out either by nature or by man, which has given rise to the notion that this object was a stone coffin, but a slight examination disproves the theory; first, the stone from end to end is not more than 5 ft. 6 in. in length; secondly, the depression which is supposed to have contained the head is only 6 in. in depth, and is on one side of the main hollowing, rendering it impossible to place a corpse into the stone. Some of the members deemed the stone had been a churchyard cross, and that the depression had held one arm of the same, others again thought it had been fixed in the wall of the church, but Mr. Worthington Smith (who made an admirable picture of the carving on the stone) suggested it had once formed the base of the wheel cross previously referred to as having been degraded and used as a parish stocks. The carved work represents two archaic heads, some interlaced work, such as we find on the Pembrokeshire crosses of Carew and Nevern, with other markings, which seem to follow the natural outline of the stone.

From Llanrhidian the party drove on to Weobley Castle, when the order was given that luncheon should be eaten, members having been warned to provide their own commissariat. Weobley, or what remains of it, seems to date from the fourteenth century, and is a somewhat puzzling block of buildings, two sides only being left to give us the clue, and these appear as a labyrinthian cluster of towers, angles, buttresses, and queer projections, the whole being lighted by small quatrefoil and cinqfoil windows. Mr. Davies gave an exhaustive account of the history of Weobley. It is first mentioned in the Brut-y-Tywysogion, where it is stated that the castle was "built by Harry Beaumont, who came from Somerset, warred against the sons of Caradoc, and built Weobley Castle." It was burned by the Welsh in 1180, and, having been rebuilt, was eventually dismantled by order of the Protector in 1648. From the Castle the party proceeded to inspect a menhîr or monolith known as Samson's Jack. At this point the party divided, the bulk returning to Swansea, and one adventurous division climbing the height of Cefn Bryn, to see the cromlech known as Arthur's Stone. This mighty dolmen is formed of an unshapely mass of the conglomerate of the old red sandstone of the district; it is now about 14 ft. long, 7 ft. deep, and 6 ft. broad, but these were not its original dimensions, for there is a block lying by its side large enough to make the cover for a very respectable small dolmen. According to the story this was shorn off by the sword of no less a personage than holy David, the patron saint of Wales. The stone originally was sustained by eight, or perhaps more, uprights, but is now held up by four. Its weight is calculated at twenty-five tons. Being their own masters, the adventurous party referred to determined to proceed from Arthur's Stone to Penrice Castle, which was voted by acclamation

* Continued from page 323, *ante*.

to be the crowning beauty of the day's excursion. It stands in a beautifully-timbered park, which slopes down to the shores of Oxwich Bay. The castle itself stands on a mound overlooking the modern house of Penrice, one of the many mansions belonging to Mr. C. K. M. Talbot, M.P., of Margam, Lord Lieutenant of Glamorgan, and father of the House of Commons. Penrice is, without doubt, the most important military ruin in Gower, and the visitors regretted that the lateness of the hour prevented them from making a careful examination of the structure. From Penrice they drove back to Swansea, through the wooded lanes of South Gower, and did not reach their destination until ten o'clock,—too late for the evening meeting, at which a paper, by Mr. T. L. Fowler, "On Certain Stones found in the Gnoll Neath," was read by the local secretary, Mr. W. Lewis, in the author's absence. On this there was a discussion, in which Major Lawson Lowe, Mr. Banks, and other members took part.

On Thursday Mr. Bath conducted the archæologists to Swansea Castle. The parapets of open arches, which embattle the keep, form a striking feature. These were built by Bishop Gower in the fourteenth century, and their chief interest consists in their extreme dissimilarity to the building bishop's arch-work at his two palaces of St. David's and Lamphey Court, for at Swansea the arches are elaborated with pillars and wrought capitals, whereas in the Pembrokeshire examples the arches are perfectly plain, round-headed, and formed out of the main wall, the result being much more effective than the more pretentious work at Swansea. In the Castle Mr. Capper read an admirable paper on the history of the Castle. The party next proceeded to St. Mary-street, which formerly was better known as Butter-street, to examine the remains of the old monastic hospital which form part of the old gabled Cross Keys tavern and the adjacent houses in Cross-street. Here Mr. J. Buckley Wilson, M.R.I.B.A., exhibited a ground plan, a section of the roofing of the old hospital, and an imaginary sketch of the interior of the old chapel, the open timber work of the roof of which still remains in place. The discovery of these fine old oak roofs was made by Mr. Wilson about two years ago, and he was cordially assisted in his investigations by Mr. Andrew Cruikshank.

An interesting paper on the remains was read by Mr. Wilson, who said:—I have much pleasure in showing you the remains of that which once formed the Hospital of the Blessed David. A copy of the charter of the foundation and endowment of the hospital by Henry de Gower, bishop of St. David's, in 1333, may be seen at the Royal Institution, Swansea, and is well worthy of the most careful perusal. But while you are here, I wish specially to point out to you what constituted part or parts of the Hospital, and, to convince you that these are undoubtedly their remains, I will read a paragraph from a paper read at the Royal Institution, by the late Col. Grant Francis, F.S.A., in which he begins by saying:—"That Mr. Dillwyn mentions a 'tradition that the Hospital had a frontage in Butter-street,' otherwise St. Mary-street; the words of the Foundation Charter positively confirm this, and adds, and I believe I have discovered the very site in the present Cross Keys public-house. Riding one day into the Castle Inn yard from Cross-street, I observed a gable of some old premises, the outlines of arches which struck me as similar in character to those in Swansea Castle, but they being walled up and thickly coated with white lime, a mason was employed to ascertain whether my impression was correct. On being cleared out, we found, in a very old and thick wall of native rubble work, one double and one single trifoliated arch of the early part of the fourteenth century, of the same form and Sutton stone as some of those inserted by De Gower beneath the parapets of Swansea Castle." Possibly many here will remember these words actually delivered. Now, in my opinion, those fourteenth-century windows peculiar to De Gower, are those of the Infirmorium or sick chamber. In front, facing St. Mary-street, and running horizontally east and west, was, I believe, the Hospital Chapel. "Whereas the Charter relates that the said master or warden of the said Hospital, and the chaplains for the time being, and the other poor persons dwelling therein, as aforesaid, do celebrate (services) for the soul of our late Lord David, Bishop of St. David's, &c." Upon examining the roof of this Infirmorium, and removing a plaster and gaudily papered partition, I have discovered some early fourteenth-century oak principals. They have the simple chamfer, the flat purlins, and notched ridge, the shoulders of collars being tenoned and secured by as many as four oak pins. The workmanship is rough, as all carpentry was at that period. The part I believe to be the chapel has a similarly constructed roof, but the principals are not in such good order, the reason being that it is floored so high that there is hardly sufficient room for headway under the collars: consequently they have been cut away or scooped out, this room being used for a sleeping compartment in a common lodging-house. The work has been much mutilated, but, taking away the first floor and standing upon the original one, the proportion, the simplicity of construction, and design of the roof surmounting the massive masonry and deeply-recessed windows must have had an appearance of grandeur and solidity. The main building forming the general plan of the Hospital of the Blessed David appear to have been an irregular quadrangle enclosing two garths, brewhouse, kitchen, with domestic offices. Of the two garths, one was probably used as a kitchen or herb garden for use of the laity, the other one probably for use of the priests. The old fig-tree at present in the garden is most likely a scion of an older one, although these trees attain a great age. As I have said, the southern side of the present building appears to be the Chapel and Infirmorium already described, with offices under. The south-west corner would most likely be the warders' and priests' lodgings, and in the building beyond, on the west side, I should place the refectory, it evidently having been open to the roof: a portion of this is still existing, as in the other portion of the building. Under this probably would be the calefactory or general meeting-room for talk, &c. To the northern side would be the kitchen. The brewhouse still retains traces of the flue. One of the flues (approximately the kitchen) is lined with flat stones; these are easily seen. A portion of a square shaft, giving every appearance of a hoist still remains. I have traced now with you the undoubted outline of this very important semi-monastic establishment. I hope, if enabled to continue my researches, to trace the remains of still further buildings. There would appear to have been an entrance from the west side to the large garth, and near this is an aperture in the wall which might be the buttery or serving-window for giving out the doles, &c.

The party then proceeded to view the parish church of St. Mary, which is an instructive example, showing how a fourteenth-century church (the tower seems to be older) may be externally and internally converted into a structure admirably adapted to meet all the requirements of a congregation of advanced Welsh Methodists. There monuments have, by some strange chance, escaped destruction. One, of a priest, which, as might have been expected, was removed from its place of honour in the chancel, and turned out of doors (it has now been again put under cover). Some have imagined that this ecclesiastic was no other than Gower himself, a mistake, for the building bishop lies in his own cathedral of St. David. Probably Mr. Gamwell's conclusion is correct, viz., that the effigy represents a bygone warden of the Hospital of the Blessed David. A fine brass on the northern wall of the chancel commemorates Sir Hugh Johnys, Knight, and the Dame Maud, his wife, telling how he was created a Knight of the Holy Sepulchre in the city of Jerusalem on Aug. 14, 1441, having been there for the space of five years waging war against Turks and Saracens in the parts of Troy, Greece, and Turkey under the Emperor John; how he was subsequently created Knight Marshal of France under John Duke of Somerset, and Knight Marshal of England under the Good John Duke of Norfolk, who gave him the manor of Landimor in Gower. This was the Sir Hugh Johnys who courted Elizabeth Woodville, she who eventually became queen of Edward IV. Although recommended by the Duke of York and Richard Neville, the kingmaking Earl of Warwick, Elizabeth would have nothing to do with the doughty Welsh knight. In St. Anne's Chapel is an altar-tomb to the the memory of Sir Matthew Cradock, who was married twice,—first to Alice Mansel, of Oxwich; secondly, to the Lady Catherine Gordon, Perkin Warbeck's widow. The effigy of the latter lady lies by that of Sir Matthew, notwithstanding that she took to herself a second husband' Christopher Ashton, and reposes by his side in the church of Fyfield, Berks. The condition of this beautiful tomb is simply a scandal, the dirt on it being at least 1 in. deep.

In the afternoon the members of the Association were entertained by their excellent President at Penllergare, where he showed them two small rectangular earthworks abutting on the old Roman road. In the evening a meeting was held, confined to members only, at which it was decided that the Congress for 1887 should be held at Denbigh.

For Friday, the last day, the finest scenery and the rarest prehistoric monument in the peninsula of Gower had been reserved. The party started in a drizzling rain, which, however, cleared up just as the visitors reached Park le Breos, where they were met by Sir Hussey Vivian, Bart., M.P., F.G.S., who had travelled from London for the purpose of entertaining the members. Sir Hussey at once led the party to the famous chambered cairn of Park le Breos. Curiously enough, it is situated in a dingle, such monuments being usually found on high ground. This valuable prehistoric tomb was discovered in 1869, and opened under the eyes of Sir John Lubbock and Sir Hussey Vivian. In consists of a central avenue, the entrance to which is funnel-shaped, and very neatly constructed of dry masonry, 16 ft. long; at the mouth 12 ft. wide, contracting to 3 ft. 6 in.; at this point it joins the central aisle, from which branch off the chambered cells, two on either side. This aisle is built of large stone slabs, and is 17 ft. long, with a uniform width of 3 ft. The chambers are 6 ft. by 2 ft., and the interstices between the slabs are carefully packed with small stones. When the cairn was opened, it contained the remains of at least twenty human beings, two of them having been aged persons, two children, two females, while the remainder were persons in the prime of life. The bones were too fragmentary to decide what was the shape of the crania. With the human remains were deer and swine's teeth, and fragments of sun-dried pottery. The chambers contained two and three bodies, the remainder were arranged in the central aisle.

A short discussion ensued as to whether the vaults had been originally covered in with large slabs, Sir Hussey Vivian demurring to the theory that they had been previously removed.

Archdeacon Thomas, in the name of the Society, tendered a vote of thanks to Sir Hussey for the exceedingly careful manner in which he had preserved this valuable monument.

Lunch was provided for the Association on the lawn, and the party then divided; one section proceeding to Oystermouth Castle, the rest driving to Pennard Castle and the Bone caves. Oystermouth Castle disputes with Penrice for the honour of being the chief military stonghold of the peninsula. It is a very important piece of military architecture, and a noble but somewhat confusing edifice. Its windows and gables present somewhat of a domestic appearance, and its gateway is poor. Mr. Freeman points out that, both from a military and picturesque point of view, it is damaged by its chapel, which is on an upper story, where its east window is crammed in between small windows, which painfully impress one with the notion that "restoration" is a venerable institution. From Oystermouth the party returned to Swansea. The party which had branched off to see the Bone caves did not return until late in the evening. After the usual vote of thanks, proposed by everybody to everybody else, the proceedings of an extremely pleasant week terminated with a dance.

CARNARVON CASTLE.

THE last paper read before the Architectural Section of the Archæological Institute's recent Congress at Chester, as mentioned by us last week, was by Sir Llewelyn Turner, on Carnarvon Castle, of which he is Deputy-Constable. In the course of his paper, Sir Llewelyn said,—We are very much indebted to the late Mr. Hartshorne for his industrious researches in the Record Office, but while according to him all the honour justly his due for those examinations, truth requires me to show that the deductions he has drawn are fallacious, and such as I feel certain he would have corrected had he possessed the local knowledge which I necessarily have. My justification for claiming a clearer light upon the

subject I conceive to be this:—While the public records that Mr. Hartshorne found and quoted have equally been accessible to me as to him, my researches have been much more prolonged, and have resulted in the possession of a large number of records, bills, and materials now in my possession. Born within two miles of Carnarvon, and still occupying the same dwelling, I have had a lifetime's acquaintance with the castle, and for many years have been engaged in gradually digging it out and repairing it, clearing out thousands of tons of rubbish from its interior and exterior. As the Chairman of the Harbour Trust, I have had to do with the planning and erection of large contiguous works, and have carefully gone into the question of time and labour necessary for the erection of some of the wonderful structures of the great port of Liverpool, while on matters of evidence I have had the opportunity of consulting some of the keenest analytical minds. At page 237 of the *Archæological Journal*, vol. vii., will be found Mr. Hartshorne's paper, valuable, I submit, for the recitals it contains, but unreliable in other respects, because founded on erroneous deduction. The first error, as I submit it to be, consists in the statement that immediately after the execution of Prince David in 1283, Edward I. "began" the erection of fortresses, and within six weeks afterwards commenced building the Castle of Carnarvon. This statement is the foundation of many mistakes that naturally follow. The king had in 1277 obtained a strong hold of the Principality; he had the castles of Hawarden, Deganwy, Flint, and Rhuddlan, where he and his queen lived during the tenth and eleventh years of his reign. He had the castle of Aberystwyth in Cardigan Bay, and later on that of Criccieth, twenty miles beyond Carnarvon, and many other strongholds, including Ruthin, to which the king and queen freely passed during those two regnal years. Therefore the assertion that he *began to take* these steps for securing the country after the execution of the last prince is as erroneous as it is contrary to what would naturally be expected from the known energy of the great monarch to whom we are indebted for these and other grand Mediæval monuments in Wales. Mr. Hartshorne has, I submit, fallen into error in treating the first record he has found as to the erection of Carnarvon Castle as being the first that existed. So far little, if anything at all, has been found as to the erection of Beaumaris Castle, and although I have a large quantity of the bills relating to the erection of Carnarvon Castle, and far more than fell to the bag of Mr. Hartshorne, those I possess fall immeasurably short of the whole account of the erection of this great fortress. The town of Carnarvon embraced within the walls is the entire work of this great king, and to that town he promised a charter in the eleventh year of his reign. Now, the eleventh year of the reign commenced on the 16th of March, 1282, and the charter was promised in the eleventh year and confirmed in the twelfth. Mr. Hartshorne's paper goes on to say that there is now no means of ascertaining what portion of the building was first commenced. It then goes on to discredit the tradition that the castle was built in a year. Now I presume none but a believer in witchcraft would assert that all we now see and admire was the work of one year; but with all deference to those who readily ridicule the accepted tradition of a people, I unhesitatingly assert that the ridicule should fall upon those who, without inquiry, condemn what, upon every ground, I assert to be true. The mass of bills relating to this castle inform us within two or three years of the time it took to build. But that a sufficient portion to shelter a garrison was erected within a year I have no more doubt than I have of my own existence. To suppose that the energetic King Edward would not put up enough of this chief stronghold within a year to contain a garrison is to rob him of that prestige to which he is so fully entitled. After stating that there is now no means of ascertaining what portion of the castle was first commenced, Mr. Hartshorne's paper (as the result of discoveries of bills which, it is as clear to me as the sun at noonday, relate to the last parts of the castle built) goes on to say that "the castle was commenced at the north-east corner, and gradually went to the south-west, when a sharp curve indicates the beginning of fresh operations." *The south-west* is a distinct error of description. The wall described as the first portion erected is clearly the last, and so far from the geological character of the stone, as asserted, proving anything of the kind, the only proof it affords is distinctly to the contrary. The paper informs us that certain covering stone used in the corridor of the Eagle Tower is of the size and geological character of stone agreed to be supplied by one Walter De Kank. I have a copy of the agreement, which is without date. I happen to be trustee of the property at Moelydon, where the quarry is said to be, and to have lived my life within two miles and a half of it, and my excellent mason in the castle, John Jones, an Anglesey man, who knows all the quarries whence the stone of the castle came, can confirm the fact that none of the Eagle Tower stone came from Moelydon, but from the quarries on Lord Anglesey's property, much lower down. So far from the covering stones in the Eagle Tower, as alleged in the paper, corresponding in size and number with the agreement with Walter De Kank, there is not a covering stone in the castle that does. The stones were clearly for a different purpose. This mistake arose through Mr. Hartshorne measuring the covering stones of the corridors as if they rested, as he tells us, only 3 in. on each side, on the corbel tables, whereas they rest beyond, on the walls themselves. It is much to be regretted that Mr. Hartshorne, during his short visit to Carnarvon, should have been grossly misled by persons evidently ignorant of the locality. For the purpose of identifying this quarry, we are told that it is the place where the tides coming over Carnarvon Bar and by Beaumaris meet; the fact actually being that this meeting of the waters is at a point near Beaumaris, some seven or eight miles further down the Straits. The wise informant, whoever he may be or have been, then performs a miracle, for he tells us, through Mr. Hartshorne, that the iron bolts to which Edward I. fastened his bridge of boats, at the point in question, are still to be seen on the Carnarvonshire side, about two yards under water at low water, which is considered a proof of the water of the Menai having risen about 6 ft. since Edward built his bridge. I can only say that as the chairman for nearly thirty years of that authority which exercises jurisdiction over these waters, and a member of that authority for thirty-seven years, I am quite unaware of these rings or this modern miracle of the permanent rising of the sea, which would of course have to be general on the whole Irish Channel or Sea, and, as an old sailor, I simply state that no bridge of boats could be held by mere rings put in rocks in such a place, and that anchors fore and aft, and strong trees, anchors, or posts ashore, must have been necessary to secure a number of vessels exposed to such winds and tides as frequently prevail there. To return to the castle, I have no doubt whatever that the outer circuit of wall was completed, with a portion of the town wall, up to a low elevation in the first year of possession, and that the king's ships effectually guarded the remaining portion. Mr. Hartshorne laboured under the disadvantage during his brief stay at Carnarvon of seeing it as it then was, and of not knowing how much of the sea has been embanked to the north and north-east, as well as to the south-west of the town. Had the king erected the wall next the town as described, he would have been simply building a useless inner wall with the kitchens and other entirely defenceless places exposed to incursion. He was wiser than to do that, and any military man will see at a glance that he had but to build the outer circuit of walling of the castle, and a very little of the town wall to a low elevation, as far as the East Gate, now the Guild Hall, to secure the land side, and his ships did the rest. I never doubted the fact that sailors did important service in this way, and I found among the bills in the Exchequer, 297, Miscellanea, No. 16–7, Edward I., "Stipends of Mariners in the Fortification of Carnarvon and Criccieth" in the eleventh year, that is the year preceding the birth of Edward II. One, "paid by Hugh de Leominster, 40*l.* 10*s.* 7½*d.*" I now come to the tradition that the Second Edward was born in Carnarvon Castle, and, unless I am totally incapable of comprehending evidence, I say, after due comparison of tradition with the architectural features of the castle, and the public records, that there is not a particle of evidence to the contrary. The late Sir Francis Palgrave, to whom all antiquaries are so much indebted for his compilation of the military writs of this interesting period, during a visit to Carnarvon, a great many years ago, at once detected that the Eagle Tower had been built at two different dates. One (the lower portion) I have no doubt, by the First, the upper by the Second, Edward. In proof of this, I may say that I discovered a beam-hole of the original roof by ascending the inside of a chimney. I now come to the document to the discovery of which we are indebted for Mr. Hartshorne's paper, valuable for its research, though containing mistaken inferences, which I have no doubt he would have corrected had he possessed the advantages placed in my way. The document, which relates to the tenth year of Edward II., which I also found in the Record Office, is in Latin, and the following is a translation:—

"Exchequer Miscellanea: Treasury of Receipt.
Indenture No. 2.

No. 8·25.

This indenture made between Roger de Mortimer, Lord of Chirk, Justice of Wales, and Edmund de Dynyetven, Chamberlain of our Lord the King, in the parts of North Wales, witnesseth that the lead and tin of the King found in the King's Castles, in the same parts of North Wales, received of Lord William le Duyan, his predecessor, Chamberlain there, and also purchased by the same Edmund, whilst he occupied the office of Chamberlain, from the first day of May, in the tenth year of the reign of King Edward, that now is to the 24th day of June, in the twelfth year of the same reign, by the particulars and terms by a certain account thereof, made in the presence of William de Shaldeford, Comptroller there for the King, in the name of the Justice and of Master Henry de Ellirton, master of the works of the King there, between the said Edmund and the clerks of the works of the King in the said Castle by turns, namely William Meverel and William de Lye, and by the view and testimony of Hugh de Eglynton, under constable, and Henry, the plumber, surveyors of all the expenses incurred there within the time above said by the said Justice thereto deputed and sworn, the same Edmund expended in the works of the Castle of Carnarvon, of the aforesaid lead and tin, namely in the covering of the Eagle Tower, newly done and covered, and of divers other towers, and also in the repair and mending of divers gutters, and in making great leaden troughs for salting the meat in the King's store there and putting therein meat, salt, and honey, as in the same particulars and account is more fully contained, and specified, 10 carratis, as the said surveyors acknowledged and swore to before the aforesaid justice and comptroller, as having been faithfully expended and used up in the works aforesaid during the same time. And of tin, £3 lb.

* * * * *

In witness whereof the aforesaid Justice affixed his seal to the part of this Indenture remaining in the hands of the aforesaid Chamberlain, and to the other part of the same Indenture remaining in the hands of the said Justice, the said Chamberlain affixed his seal.

Given at Beaumaris in the morrow of St. Marcus the Evangelist (April 26th), in the 12th year of the reign of the King aforesaid."

A very learned friend of mine, of ripe age, accustomed from his youth to translate ancient records, gives me the following opinion upon this document, which, as far as the belief that the roof only is meant by the *de novo*, corresponds exactly with the opinion I received some years ago from the learned chancellor of a diocese. My venerable friend just referred to expresses himself as follows, "As I read the Latin original, the sentence on which you ask my opinion, '*In co-opertura turris acquile de novo facte et co-operti*,' which, whatever *et* may mean, is not strictly Latin. If the *e* at the end of *facte* is meant for a diphthong, the tower itself may be intended to be referred to *turris*, as well as *co-opertura*, being of the feminine gender. I do not, however, think that the tower is meant to be referred to, because *co-opertura* the covering *de novo* probably with lead instead of some former temporary covering of tin or other material had been used before. To have made the sentence plainer the words *facte et co-operti* should have been written *factæ et co-opertæ*, in which case there had been no room left for doubt. When we find the doubts and difficulties daily experienced in the interpretation of agreements and documents of all sorts, about all Acts of Parliaments, who can take upon himself to assert that this in *co-opertura turris aquile de novo facte et co-operti* means that the Eagle Tower was rebuilt when all architectural deduction proves that it has been built and raised upon? This I will show you by the beam-hole in question, by the adjoining curtain not being bonded up to the height it would have been had the tower been erected at one period to its present elevation. The paper under discussion says that all soldiers would have had to pass through the Queen's bedroom to the rampart of the wall on the town side. That wall was partly erected first and finished by King Edward II., and I will show you that when the latter completed it he closed up a window and cut a door to the ramparts. Having myself opened the moat, I have been able to verify the Welsh tradition as to Madoc's rising, that during a fair held across the harbour the insurgents at low water penetrated the moat below the Eagle Tower, where the broken wall

and the temporary substitute for it may still be seen. Tradition accurately stated that the insurgents got into the castle, and the place where the wall was repaired and raised afterwards, when a large body of masons were sent from England for the purpose, is still plainly visible. The damage done to the building was not great, thanks to its enormous strength. Some persons totally unacquainted with building operations have ventured to assert that there was no time to get any portion of the castle ready in time for the Queen's accouchement. Now, I reply to this with the brevity required, for want of time here, that being the author of the large quays erected of late years in the immediate vicinity, also of the restoration of the west gate of the town, which I converted into a yacht club-house, and of the repairs of the castle, I feel that I need no apology for declining to be led by such opinions. I repeat that no doubt exists in my mind that we have not got hold of the date of commencement of the building. I have many records relating "to our works in Wales" without these stating where. An important proof that the king was in possession of Carnarvon and the district long before the date assigned by Mr. Hartshorne will be found in the Exchequer Record "Military Service, Wales," in the roll of wages of knights and esquires in the Welsh war for the tenth and eleventh years, that is, from November 16th, 1281, to November 15th, 1283. In the eleventh year Thomas de Maydenhach and his clerk being in the fortifications of Carnarvon, received by day 2s., and others were in the fortifications. Note the word "fortifications" is used up to Christmas, 1283; that is, the Christmas preceding the confinement of the Queen, up to which time he is merely alluded to as receiving wages amongst the knights, esquires, and men of various grades, and is actually in one place alluded to as porter of the door, this probably being an error of the accountant. Then in the twelfth year he becomes Constable of the castle, a castle which, according to the evidence I am rebutting, did not exist. I have no time here to notice great errors in the paper in the *Archæologia* by Mr. Hartshorne as to the erection of the town walls, which in one place are spoken of as being erected in a particular year, whereas they occupied several. A word now as to the smallness of the room in which I think there can be no doubt that the first Prince of Wales was born. I cannot conceive of any antiquary attaching the smallest importance to this. The Queen faithfully followed her husband in his wars, lived in tents, and encountered all sorts of discomfort. The Rhuddlan roll gives an account of the lime to plaster her chamber when she was there, the full account of the purchase of turves and shingles, broken casks, &c., for temporarily covering the hall and different buildings. Therefore, the apartment in the Eagle Tower, hung, as it probably was, with tapestry, would be a very good one for a building not a quarter of which was complete. It contained a fireplace, and closely adjoins the very large adjacent apartment, which contained an opening to an oratory for the confession, no doubt, of the Queen. I hardly feel called upon to notice the opinions of those who, without knowing when the castle was really commenced, and without any of that experience of large buildings which I have had, tell us there was no time to have erected sufficient sheltering for the Queen. Up to the height first erected there was plenty, and I feel little doubt that had the cartloads of lost records so unfortunately left at Carnarvon been forthcoming we should find that the preparations for erecting this castle were going on for a long previous time in Anglesey, whence large quantities of this stone came, and I have the record of the king's ships continually going with men to Anglesey in the 10th and 11th years from Rhuddlan, and there was plenty of hewn stone ready at Segontium which tradition says was also used, and this old town of Segontium is called in the bills I have found in the Record Office, "the Quarry at the end of the Town." It is the fashion erroneously to assume that we are more in advance of our ancestors in the erection of great works. If so: *where* is the modern building that surpasses Carnarvon Castle? Eminent engineers tell that as able engineers were to be found in former days as now, and that many greater works were executed prior to the Christian era than now. In 1377, about ninety years after the erection of Carnarvon Castle, the great bridge of Adda, with a span of 237 ft. and a height of 68 ft., was built in Italy, and the largest modern stone bridge erected (one in America) is only 215 ft. span, or 22 ft. less than the one which preceded it by 500 years. So much for ancient work. Now, here is an ordinary proceeding in Liverpool,— a block of warehouses at Bootle, 372 ft. long, 110 ft. deep, with no fewer than eleven blocks of buildings all this depth, that is, each of the eleven blocks 110 ft. deep from front to back, each seven stories high, each story with 12 ft. head-room under the beams, the walls being 90 ft. high, containing 242 windows, each set in an arch. The building was commenced in September, 1882, was finished and occupied on the 1st of September, 1883. Compared with the first portion of Carnarvon Castle, which is that clearly alluded to in the tradition, that it was built in a year, this Liverpool work is really gigantic, inasmuch as an outer wall to a low elevation was nearly all that was done at first in the castle,—enough in short, to hold a sufficient garrison; and when we reflect on the smallness of the numbers of the garrison in it, we seek and find a reason in the utter absence of implements in a pastoral country to attack fortifications,—in the entire possession by the king of the sea by means of his ships. As chairman for some years of H.M. Prison for Anglesey and Carnarvon, I have made some interesting discoveries in that building. It is close to the castle. A splendid sewer, the bills for making which I found years ago in the Record Office, passes through it from the castle. I also found the base of a tower in the prison of similar date to the castle. This fine sewer explained a great difficulty I previously had as to the well of the castle. I have lately dug out exactly what I expected to find, viz., the temporary wall on the town side, which preceded that erroneously mentioned by Mr. Hartshorne as the first part erected. I have shown you that the castle had a Constable in the twelfth year of the reign of the first Edward, therefore it is idle to assert that the inner wall erected years after is the first building, as in that case there was no castle to be Constable of. One word as to the position of the Eagle Tower. It was infinitely the more likely place and the only likely place for the Queen's confinement. Then the towers of the town walls were not built; I have the bills of later date. The whole length of fortifications from Queen Eleanor's Gate would have had to be fought and taken before an enemy got to the Eagle Tower, which was really the keep, and if the upper or east end was taken the Queen could have been shipped afloat at once, as my predecessors in the Harbour Trust had not then injured the navigation, creating large banks and silting of the channels, by building a wall which they grandiloquently called the Victoria Pier fifty years ago across the tide,—an excrescence which I have now removed, not without some obloquy from grumblers. At this period the sea actually reached to the foot of the walls. The late Mr. Joseph Burtt, of the Record Office, from whom I received valuable aid, drew my especial attention to the ornamentation of the Eagle Tower, which was handsomely ornamented all over with figures, the rest of the castle being ornamented only with finials, and he contended that some special reason existed for this. I suggested it to be directly the result of the king, who was born in it, decorating that particular part, a suggestion that commended itself to Mr. Burtt. To prove that it was erected *temp.* Edward II. Mr. Hartshorne has laid down that the ornaments are the bassinet and jupon *temp.* Edward II. That the upper story and the three turrets were erected *temp.* Edward II. is perfectly clear, as proved by the bill quoted *temp.* Edward II., and by the architectural features of the buildings; but the ornaments are not, as he says, confined to these particular ornaments, but are as varied as if in this day a castle were ornamented with a crown, the Queen's head with her crown, helmets, &c. The Roman Prætorian guard will, I believe, be found there, three eagles, and numerous other devices.

As briefly mentioned in our last, the members of the Institute visited the Castle on the following day (Aug. 17), when Sir Llewelyn Turner spent several hours in conducting them over the various parts of the ruin, and was indefatigable in his efforts to add to the information of the visitors, and in pointing out the various pieces of evidence which go to confirm his view of the architectural history of the Castle. At various points he called attention to the admirable repairs done by the Castle mason, John Jones, who, in his working dress, and with "all his blushing honours thick upon him," was introduced to the visitors. It should be added that Sir Llewelyn Turner has compiled a handy little "guide" to the Castle, which, though it might be furnished with a better and clearer plan, will be found very useful by visitors in conjunction with the admirable system of lettered reference labels which the Deputy-Constable has had affixed on light iron standards in front of the principal portions of the Castle ruins.

Before the visitors left the Castle, Mr. R. S. Ferguson said that he had been desired by Earl Percy, who had been obliged to leave, to move that the warmest thanks of the members of the Institute be tendered to Sir Llewelyn Turner for the very great trouble he had taken that afternoon, as well as for his paper read in Chester on the previous evening. It sometimes was their misfortune, in the course of their visits to many places, to come across ruins which had been shamefully and grossly neglected, and such neglect very often aroused feelings of deep indignation. Carnarvon Castle, however, had not been so neglected, and was happy in its possession of a Constable (Earl Carnarvon) who took an interest in archæological pursuits,—a nobleman who himself had held the post of President of the Royal Archæological Institute. The Castle was also happy in its possession of such an able and indefatigable Deputy-Constable as Sir Llewelyn Turner, who had made the castle the study of his life, and had grudged no trouble to put it in proper repair and order. Neither had he grudged any pains to make the visit of the party that day of a most interesting character, and to explain to them the fullest details with regard to the Castle. When the visitors saw the great care which had been taken, not only by the fixing of guide-posts, but also by repairing and restoring the battlements and towers, they would agree that Sir Llewelyn had set an example which it would be well for custodians of similar places to emulate. Mr. Ferguson also thanked Sir Llewelyn for the manner in which he had entertained them at luncheon.

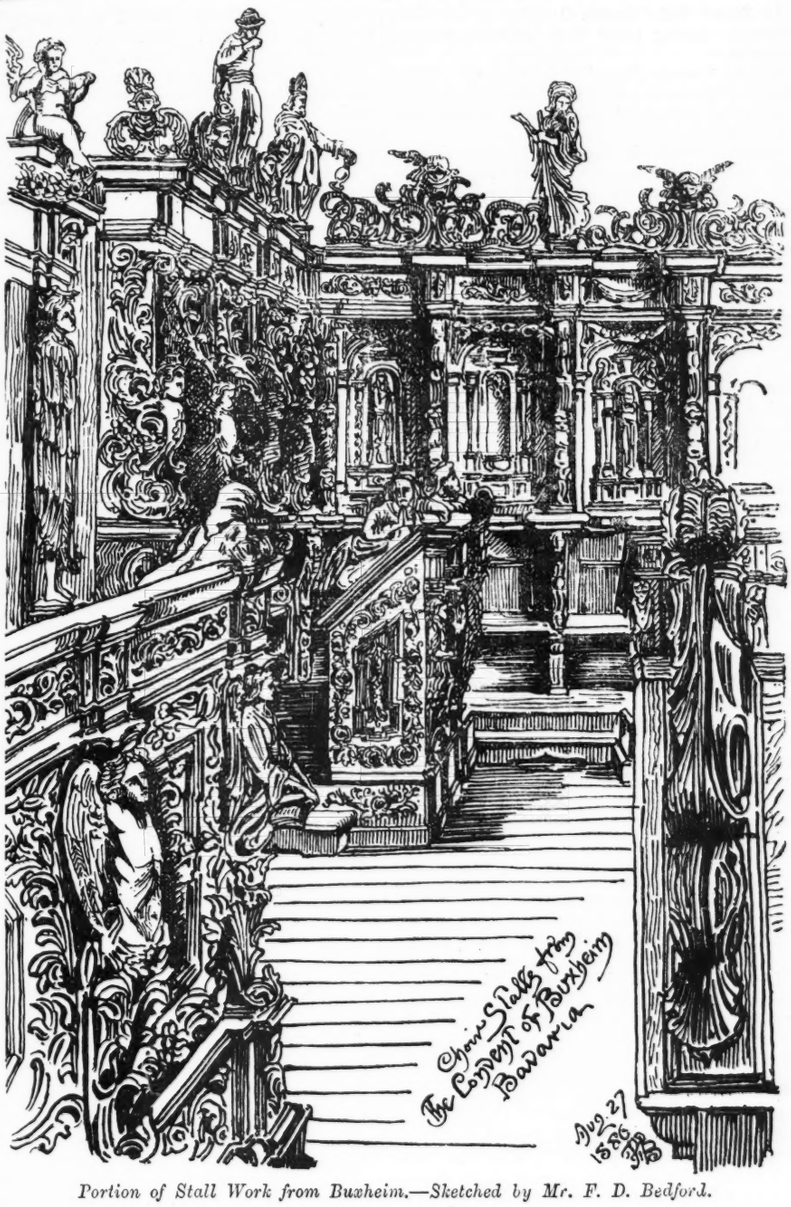
Mr. Pullan, in seconding the motion, said that undoubtedly Carnarvon Castle was one of the finest in existence, and he wished that every castle in the kingdom was possessed of such an able custodian as Sir Llewelyn Turner, and of such an admirable mason as their friend John Jones.

Mr. John Griffith, Chester, on behalf of the members of the Chester Natural Science Society, supported the motion, which was heartily adopted.

Sir Llewelyn Turner, in briefly replying, said that what he had done in connexion with the castle was purely a labour of love. Perhaps they would allow him to make a suggestion to the members of that learned society. He thought they could render incalculable services to all such buildings as that throughout the United Kingdom, if they would protest against the system of appointing as custodians persons who did not spend the money received as entrance fees from visitors upon the repair and maintenance of the places under their charge.

The Chester Meeting of the Royal Archæological Institute.—In our last we inadvertently omitted to state that on the day of the excursion to Delamere Forest (on the 14th ult.) Mr. W. Thompson Watkin conducted the members to the junction of the Roman roads at Nettleford, and the remains at Organ's Dale and Lob Slack, of which places he at the same time gave a description.

Obituary.—We hear, with regret, of the death of Dr. James G. Wakley, editor of the *Lancet*, which took place at his residence, near Chertsey, on Monday. The deceased was the youngest son of the late Mr. Thomas Wakley, founder of the *Lancet*, Member of Parliament for Finsbury, and Coroner for Middlesex. He became a member of the Royal College of Surgeons of England in 1849, and graduated Doctor of Medicine at King's College, Aberdeen, in 1852. At his father's death, in 1862, he became editor of the *Lancet*, the duties of which position he discharged for nearly twenty-five years. He was one of the founders of Hospital Sunday in London, and remained throughout one of its warmest supporters. Only a few days before his death the present and past members of his editorial staff presented him with an illuminated address expressive of sympathy and esteem.



Portion of Stall Work from Buxheim.—Sketched by Mr. F. D. Bedford.

CHOIR STALLS FROM THE CONVENT OF BUXHEIM, IN BAVARIA.

THE sketch shows one angle of the choir woodwork of the Patriarch's Church of the ancient Carthusian Convent of Buxheim, in Bavaria, which, as we mentioned last week, has been on view in Messrs. Bonham's sale-room the last few days.

The whole choir consists of thirty-one elaborately carved stalls separated the one from the other by carved open-work brackets supporting the cornice, which again supports seventeen figures, subjects of the Old Testament. The entrance doors, a portion of which is shown in the sketch, are guarded on either side by the figure of an angel clothed in its wings. The hinges on the doors are original and very beautiful. The desks are carved with figures, heads, and wreaths of fruit and flowers.

The sale of the work on Wednesday, at Messrs. Bonham's attracted a large attendance, and bidding was started by Mr. Harry Hems at 1,500*l*. The work was finally knocked down to Mr. Gaselle at 2,900*l*. The ultimate destination of the work is uncertain, but it is understood that the authorities of a College in one of our Universities are in treaty for it.

Camborne School of Art.—The vacant Mastership of the Camborne School of Art has been filled by the appointment of Mr. F. J. Gardenner, second master of the School of Science and Art, Swansea.

FURTHER NOTES AT THE LIVERPOOL EXHIBITION.

RESUMING our notes* on some of the contents of this large and interesting exhibition, taking the exhibits in the numerical order of the stands or spaces which they occupy, we have first to make mention of the exhibits of Messrs. Robert Boyle & Son (Stand 185), of London and Glasgow, who exhibit several varieties of their well-known ventilators for ships and buildings.

The National Health Society (Stand 266), exhibit a good assortment of their useful publications in the form of books, tracts, leaflets, and charts bearing on health and sanitary matters. These publications should be known to and distributed at discretion by every district visitor and city missionary; and even the recently rather fashionable pursuit of "slumming" could be carried on with better results by their aid.

The Liverpool Grain Storage Company (Stand 279), exhibit an interesting model of their Alexandra grain warehouses and elevators, Bootle. The model shows the method of storing the grain in bulk, and delivering it, by machinery.

At Stand 301 Messrs. Jeffrey & Co., of London, exhibit some wall-papers of good design.

At Stand 304, Messrs. George Elliott & Co. exhibit their patent wire-ropes and tubes, which have much to recommend them. Close by (Stand 306), Moule's patent earth-closets, as adapted for use on board ship, are exhibited.

Messrs. Homan & Rodgers, of Manchester (Stand 310), exhibit a series of sections of their well-known and excellent systems of fireproof flooring, as applied in cotton and other mills, warehouses, and dwellings.

Messrs. Alfred Carter & Co., of Liverpool (Stand 324), exhibit tanks, baths, lavatory-tops, and other goods, all of slate.

Messrs. R. S. Newall & Co., of Gateshead (Stand 326), display their well-known wire-rope for ships' rigging and for suspension bridges, and a strong hoist.

At Stand 347, Mr. Joseph Whiteley, of Salford, exhibits his patent grip treads, stair-nosings, and mats, which are very effective. The grip or foothold is obtained by the insertion of projecting studs of hard india-rubber in the surface of the treads or mats.

Messrs. W. Woollams & Co., of London (Stand 349), have a very good display of decorative material for ships' saloons or for dwelling-houses. These include some effective wall-papers and raised flocks (some painted and some unpainted), good in design and rich without being gaudy in effect. A useful material shown by these exhibitors is "tergorine," an imitation leather, embossed and lacquered. This firm is well known for its specialities in non-arsenical wall and ceiling papers.

At Stand 405 the Waterproof Paper and Canvas Co., of Willesden, exhibit their now well-known waterproof materials as applied to the construction of canoes, tents, &c.

Messrs. Musgrave & Co., of Belfast (Stand 509), have a very good exhibit of their excellent stable fittings, and some of their slow-combustion ventilating stoves.

At Stand 558 the "Harden Star Fire Grenade Company" exhibit their fire-extinguishing bottles or grenades, of which we have spoken on former occasions.

The Anglo-American Brush Electric Light Corporation (Stand 561A), exhibit dynamo-machines, commutators, regulators, and other apparatus, together with arc lights and incandescence lamps.

Stand 591 is tenanted by the Sanitary and Highway Appliances Company, Sheffield, who show Roberts's patent sand or shingle distributor and other appliances.

Messrs. James & Son, of Cheltenham (Stand 592), exhibit a street water-van of improved construction, with double valve and box distributor.

The New Ferry Brick Company (Stand 597) exhibit some good red bricks, and terra-cotta ridges, finials, &c.

Messrs. N. & W. Grazebrook, of Dudley (Stand 598), exhibit a patent cast-iron and wood door and frame, specially contrived for use in hot countries, and for "the exclusion of draughts." For the last-named purpose these doors would be an acquisition in many of the "suburban residences" of London, in lieu of the gaping and shrunken joinery which is so common.

Messrs. M. C. Duffy & Son, of Bermondsey (Stand 600), exhibit their "Immovable Acmé Flooring," a "block" system which gives a firm, clean, and solid surface, admirably adapted for halls, schools, passages, basements, &c.

At Stand 639, The Bessbrook Granite Company show their material in various applications.

Messrs. Yates, Haywood, & Co., of Rotherham (Stand 640), exhibit a variety of stoves and ranges, mantel-pieces and over-mantels, together with gas-cooking stoves and appliances, tiled hearths, brass fenders, &c.

Mr. W. White, of Abergavenny (Stand 651), shows a piece of concrete wall rendered impervious to moisture by the application of his "Hygeian Rock Building Composition"; also specimen lintels of brickwork built with the material and weighted to show their great tensile strength.

At the next stand (652), Messrs. T. Cordingley & Sons, of Bradford, exhibit some figures and details in "Parianetic," as well as enrichments and panels in fibrous plaster and a specimen of granite-faced concrete flooring.

Mr. J. C. Edwards, of Ruabon (Stand 654), has an exceedingly good display of glazed and encaustic tiles, wall faïence, and other architectural decorative work for internal and external use. The glazed bricks exhibited are very good in colour and shape, and the terra-cotta work is sharp and well modelled.

At Stand 655, Messrs. F. Braby & Co. show a well-executed zinc dormer; a portion of a Mansard roof, and a turret or pavilion in the same material, also exhibit good workmanship.

* See p. 321, *ante*.

Mr. J. Hamblet, of West Bromwich (Stand 656), shows some of his excellent Staffordshire paving blocks and blue bricks,—the latter being of the kind supplied by the exhibitor for lining the Mersey Tunnel.

At Stand 665 the Albo-Carbon Light Company exhibit their apparatus for increasing the illuminating power of ordinary coal-gas by superheating and the admixture of hydro-carbon vapour.

Mr. J. E. Ellison, of Leeds (Stand 671), exhibits his patent conical perforated air-bricks and "radiator" ventilators, of the merits of which we have often spoken.

Messrs. H. & C. Davis & Co., of London (Stand 673), are among the exhibitors of gas-cooking apparatus.

Messrs. Joseph Cliff & Sons, of Wortley, Leeds (Stand 692), exhibit a good representative selection of their glazed bricks and architectural faïence, together with painted tiles, glazed fireclay baths, sinks and lavatories, sanitary stoneware, &c. The "Imperial" porcelain bath, shown at this stand, is made, in one form, to be used without the customary boxing-in or enclosure of joiners' work.

Messrs. Edward Smith & Co., of Coalville, Leicestershire (Stand 693), make a good display of terra-cotta plaques and panels, glazed floor and dado tiles, hearth tiles, and encaustic tiles, all good in quality and design. They also show a rich frieze,—in glass mosaic apparently, with very small tesseræ and fine joints. Although the result, from a decorative point of view, is very rich, it is questionable whether, with such small tesseræ, the characteristic and special effect of mosaic is not rather weakened. Taken as a whole, the exhibit is a very good one.

Messrs. Maw & Co., of Jackfield, Shropshire (Stand 695), exhibit a very good specimen of mosaic work, as well as some excellent encaustic tiles and glazed floor, wall, and hearth tiles.

The Sneyd Colliery and Brick Company, Burslem (Stand 699), have put up a small erection showing their excellent glazed bricks in various tints as applied to walls in dadoes, strings, &c.

At Stand 709 Messrs. Newton, Chambers, & Co., of Sheffield, exhibit the "Thorncliffe" cooking ranges and other of their specialities.

Messrs. Crossley Brothers, of Manchester (Stand 750A), exhibit the "Otto" gas engine in two forms, vertical and horizontal. One, of the vertical description, is employed to work a dynamo machine in connexion with electric accumulators or storage batteries for lighting purposes. Another and larger "Otto" engine is shown at Stand 879 driving some printing machinery.

Messrs. Walker Brothers, of Wigan (Stand 752), exhibit their patent ventilating-fans, as used for the ventilation of the Mersey Tunnel.

At Stand 757 Mr. E. S. Hindley, of Bourton, exhibits vertical and horizontal steam-engines, saw-benches, &c.

Messrs. A. Attwood & Co., of Ulverston (Stand 793), show their self-sustaining lifts and revolving shutters and partitions.

Messrs. Thomas Thomas & Son, of Cardiff (Stand 805), exhibit their self-sustaining cage elevators, warehouse and dinner lifts, sack-hoists, &c.

Stand 816 is that of the Blackman Air Propeller Ventilating Company, who exhibit the Blackman air-propellers in motion.

At Stand 850 Mr. H. J. Coles, of London, shows, by an excellent working model, his very effective grab-dredger, capable of being worked by any steam-crane.

The Hydraulic Engineering Company, of Chester (Stand 854), exhibit a balance for hydraulic lifts (Ellington's patent) and other appliances connected with hydraulic engineering.

Messrs. Robey & Co., of Lincoln (Stand 855), are exhibitors of steam-engines, some of which are specially adapted for driving dynamo machines for electric lighting.

Mr. H. G. Mumford, of Colchester (Stand 857), exhibits his efficient direct-acting donkey pumps.

Messrs. Clayton & Shuttleworth, of Lincoln (Stand 859A), show a very good portable engine.

The Coalbrookdale Company (Stand 862) have an exhibit mainly consisting of engines and machinery for use on shipboard and in connexion with electric lighting purposes.

Mr. George Jennings, of London (Stand 884), has a small but representative display of some of his well-known sanitary appliances.

At Stand 902 Messrs. C. Isler & Co. show tube-well boring plant and their registered turnstile.

Messrs. George Farmiloe & Sons, of London (Stand 908), have a very good show of sanitary appliances, plumbers' brasswork, drawn lead traps, &c.

Messrs. Chubb & Sons, of London (Stand 933), exhibit iron and steel safes and doors, as well as locks, for use on board ship and on land.

Messrs. Dean & Co., of Manchester (Stand 1,050), exhibit some wall papers of good design, and the process of block-printing by hand is shown in operation.

At Stand 1,117 Messrs. T. G. Brown, Westhead, Moore, & Co., exhibit some very good porcelain, earthenware, and majolica.

Messrs. Wilcock & Co., of Burmantofts, Leeds (Stand 1,118), have a very attractive display of their excellently moulded and coloured faïence work, including a fountain and some large vases.

The Venice and Murano Glass and Mosaic Company (Stand 1,121) exhibit some panels and plaques of glass mosaic, besides making a good display of ornamental glass.

Dr. Salviati & Co. (Stand 1,128) have also a very good show of glass mosaic work.

At Stand 1,129 Messrs. Craven, Dunnill, & Co., of Ironbridge, exhibit tile hearths, marble and tile mosaic flooring, painted tiles, vitreous mosaic for wall panels, dadoes, &c.

What is numbered as 1,146 in the catalogue is "the African Court," which is stated to be a reproduction of the porch of the palace of the kings of Ashantee at Coomassie. The design of the Court has been furnished by Mr. Frederick Radcliffe, and is chiefly from photographs and from drawings in Bowditch's work on Ashantee. The Court has been constructed under the honorary superintendence of Messrs. Bleakley & Cubbon, architects, Birkenhead, by Messrs. Alex. Bleakley & Son, builders. The catalogue contains a detailed description of the structure.

Messrs. J. Smith & Sons, of Derby (Stand 1,164), exhibit a turret clock of good finish, striking the hours and chiming the quarters upon four bells.

Messrs. Jones & Willis, of Birmingham (Stand 1,184), exhibit church furniture and hangings in various materials, and suitable in design.

Mr. J. F. Ebner, of London (Stand 1,189), exhibits some of his excellent parquetry and mosaic work, with dadoes in oak and other woods.

The Lincrusta and General Decoration Company, of London (Stand 1,207), show two "fireplace ends" of rooms fitted with their patent "combination" mantelpieces, which are provided with a firegrate screen, removable at will.

Messrs. F. Sage & Co. (of London), Stand 1,211, show a "cash counter" as a specimen of their work as shopfitters.

Stand No. 1,212 is occupied by Messrs. W. Sugg & Co., of London, with a display of their well-known gas-burners and lanterns.

Mr. F. H. Schmidt, of London (Stand 1,217), has a good mantel-piece and some oak dadoing of excellent workmanship, but the cornice of the dado is surmounted by scrolls of somewhat eccentric design.

Messrs. Gillow & Co. (Stand 1,222) exhibit a good chimney-piece and sideboard of Italian design, and a stand with folding leaves showing specimens of their sound parquet-work.

At Stand 1,438 Messrs. John Bell & Son, of Southwark, London, exhibit various applications of that valuable material asbestos.

The approach to the large Concert Hall is under a screen, which spans the main avenue. It is of glazed faïence, terra-cotta, and painted tiles, erected on a wooden framework. This is by Messrs. Doulton & Co. The design and execution are good.

The great organ, by Mitchell & Thynne, which stands in this hall, is blown by a 4-horse-power Otto gas engine by Crossley Bros., of Manchester. It is on a large scale, and is a very powerful instrument, but appeared somewhat hard in tone when we heard it; probably if placed in a larger building, which its volume is well capable of filling, this harshness would disappear; some of the lighter stops are melodious, even in tone, and distinct in character.

The Italian, French, Belgian, and other European Courts carry out the promise that they gave. Now that they are all filled up, the display of statuary, carved wood-work, embroidery, tapestry, jewellery, &c., is very effective, and much of it of a high order.

In the grounds, at the north-west corner of the Exhibition Buildings stands a copy of the Eddystone Lighthouse; it is constructed of a wrought-iron skeleton frame, strongly cross-braced, and is covered with slabs of fibrous plaster, prepared by Messrs. Jones, Mount Pleasant, Liverpool, in form and size resembling stones, of which this material in texture and appearance is a good imitation. It is ascended by a lift occupying the centre of the shaft. The electric light which is exhibited from the lantern is very brilliant, giving three flashes, and an interval of darkness, at each revolution. The structure is 150 ft. high. It has been erected under the superintendence of Mr. J. Webster, C.E. The gallery round the lantern commands, on a clear day, a fine view of Liverpool and neighbourhood.

The grounds are upwards of thirty acres in extent, and have been laid out in walks and terraces, with a spacious orchestra for outdoor musical performances. Scattered over the grounds are a number of other buildings, including the Aylesbury Dairy, various restaurants and pavilions, and an "Indian village." They are brilliantly illuminated at night with Chinese lanterns and electric light. There is, perhaps, a little too much of the advertising element about some of these structures. Especially is this the case with a gigantic obelisk, coloured to represent somebody's "mottled soap"; if the inscription on it may be believed, there has been such a demand for that particular soap that the obelisk, big as it is, only represents a six-hundred-and-ninety-ninth part of the commodity supplied by the advertiser during the last quarter of a century,—a pleasing proof of the growth of habits of cleanliness among the people, and of the profit (we hope) accruing to soapmakers.

Locally, the wish has been expressed that arrangements may be made for the retention of these grounds as a permanent place of recreation for the public.

CITY OF BUENOS AYRES IMPROVEMENT WORKS.

THE construction of these important works for draining and sewering and supplying with water the City of Buenos Ayres, the capital of the Argentine Republic, has been pushed on with great vigour during the last three years, and will, in all probability, be completed in about twelve months' time.

They are designed by, and constructed under the direction of, Mr. J. F. La-Trobe Bateman, C.E., F.R.S.

Began in 1873 by Messrs. Newman & Medici, contractors, and suspended in 1876, they were recommenced in 1883 by Mr. Antonio Devoto, by whom there is every prospect of their being satisfactorily completed. They may be considered the largest works of the kind in progress in the world, and, when finished, Buenos Ayres will be or should be the healthiest city in South America.

The works are divided into three sections as follows:—

1. The city portion, consisting of collecting, intercepting, and main sewers, regulating chambers, pumping-stations, and storm-water conduits.

2. The main outfall sewer (high and low level), sewage pumping station, inverted syphon below the River Riachuelo, and outfall into the River Plate.

3. Water supply. Inlet tunnel, pumping-stations, filters, and cast-iron piping in the city.

Of these sections, No. 1 is practically completed. It consists of some twenty-three districts or drainage areas, each district having its regulating-chamber for regulating the flow of sewage and storm water. The conduits and sewers consist of brick, concrete, and stoneware, and are collectively about 116 miles in length; there are also about 5,000 street gulleys, 650 sewer manholes, 26 underground chambers, and two pumping-stations. The largest conduit for storm water is 12 ft. high and 14 ft. wide, decreasing to 10 ft. diameter, and is about 2½ miles long. The sewers are of the egg shape, except in a few cases, where they are of special section, the largest being 6 ft. 6 in. wide by 5 ft. high. Concrete, of the proportion of six of sand to one of Portland cement, faced

with brickwork, was employed on all conduits and large sewers, and for the smaller sewers concrete only, and stoneware invert blocks and side pieces. Block-eyes and junction-pipes were left in for each house, and provision made in all deep sewers to connect the house-drain by vertical pipes and T-pieces. The sewers were laid in straight lines from manhole to manhole, the soffits of the arches of the sewers being in nearly all cases level.

Manholes were 4 ft. in diameter, built with radiated bricks, purpose made, and provided with charcoal ventilator and circular manhole cover. The gullies were built of brickwork and under the footpath; the sediment pit was large, and the trap gave a 3-in. water-seal. Each gully was provided with a manhole cover. The regulating chambers before referred to were large underground buildings, provided with apparatus for regulating the quantities due to the conduits and to the sewers; in some cases their construction was of an intricate character on account of the number of passages, manholes, air shafts, &c.

Many difficulties were encountered by the engineers at the beginning of the works, owing to the want of experience in similar works on the part of the sub-contractors. Large and sudden rainfalls had to be dealt with to prevent works being washed away. The extreme narrowness of the streets (32 ft.) and the number of tramways traversing them rendered the work in the open cuttings difficult and sometimes dangerous. Some men had their fingers crushed or were otherwise injured by passing cars; many horses were killed by falling into the trenches. Another source of danger was the accumulation of coal gas in the sewers, originating in leaks from defective gas-pipes and in fractures made by the workmen in pipes exposed in the trenches. Many explosions occurred in manholes, gullies, and sewers, and people were injured; in one case about 300 ft. of 12 in. pipe was destroyed, and in another five gullies were more or less damaged.

The setting-out of the conduits, chambers, sewers, and gullies formed an important part of the work done by the engineers, as, under the circumstances, it was necessary to record on a diagram, lithographed for the purpose, the position and value of all line and level pegs, especially in regard to gullies, on account of the necessity of building them to suit the proposed alteration in levels of footpaths contemplated by the municipality, which included nearly all the streets in the city. Diagrams were also prepared by the engineers, for the contractors, showing the position of each house-drain junction. Altogether about 3,500 diagrams were required.

Mr. James G. Killey, Assoc.M.Inst.C.E., was the engineer in charge of this section, acting under Mr. Carl Nyströmer, M.Inst.C.E., Mr. Bateman's representative in Buenos Ayres.

The total cost of these works,—drainage, sewerage, and water supply,—will probably exceed 5,000,000*l.* sterling.

About 25,000,000 bricks, made in Buenos Ayres, over 50,000 tons of Portland cement, and 390 miles of iron pipes have been used.

LAW COURT AND POLICE COURT PLANS.

SIR,—Seeing in the *Builder* several plans for the proposed Law Courts, at Birmingham, it occurs to me that it would be of service if the attention of architects and of the local authorities were called to the fact that a committee has been appointed by the Secretary of State to consider what conditions should be fulfilled in providing accommodation for prisoners awaiting trial in Courts of Justice.

The necessity for some such authoritative description of these requirements may be gathered from the reports of the Commissioners of Prisons, who have thought it their duty to bring to the notice of the Secretary of State the objectionable nature of the accommodation provided in many cases.

I cannot say what recommendations the Committee will make, but I shall be surprised if they do not assent to the propriety of prisoners under these conditions being supplied with a due amount of light, air, and warmth, and of their not being herded together to their mutual disadvantage.

I should be glad to take advantage of the opportunity, if you are good enough to insert this, of reminding any architects who may be employed to furnish plans of police-stations, or to make alterations in them, that a book of plans and descriptions of police-stations of various sizes has been printed by the Home Office in order to illustrate the various conditions laid down with regard to them.

E. F. DU CANE,
Surveyor-General of Prisons.

Home Office, Whitehall,
August 30, 1886.

TEMPLE BAR.

SIR,—Will you be good enough to grant me space to mention that a committee is expeditiously being formed for the purpose of approaching the Corporation, and calling its attention to the sad condition of the Temple Bar masonry now lying at Farringdon-street, and of making several practical, reasonable, and suitable suggestions for the re-erection of the structure on a site which shall be worthy of its oldest associations, and save the generation from another of those miserable disgraces attending the demolition of old and cherished structures?

I shall be glad of any suitable suggestions for the reconstruction, and the names of gentlemen who will add their support to the movement.

JAMES R. MORGAN.

59, *Chancery-lane, W.C.*,
August 30th, 1886.

WREXHAM PARISH CHURCH.

SIR,—In your interesting account of the visit of the Royal Archæological Institute to the above [p. 301, *ante*], you describe the apse as semi-octagonal.*

I believe it to be semi-hexagonal. The difference where a chancel is narrow is considerable, for the octagonal arrangement leaves next to no room in the centre.

There are no saints on the south side of the tower, the simple severity of which may have been overlooked, as the approach is from the north.

The south aisle was lengthened westward when galleries were introduced.

There are joint over joint traces of a closed doorway under the sixth window, facing south, and inside decidedly outside work is recognisable.

The fragments of mullions of the demolished east window, now doing duty as chancel arch, lend themselves to a seven-light arrangement and to the emphasising of the second and fifth mullions. It would have been a subject for regret had these stalactitic excrescences been cut away.†

It is doubtful if the extension eastward was ever intended for a chancel or anything but an east chapel.

H. W.

The Student's Column.

STONE QUARRIES.—X.

THE CHANNEL ISLANDS.

NEARLY all the quarries of Jersey and Guernsey are in syenitic rocks. There are districts, however, where hornblendic granite is found; and dykes and veins of other igneous rocks are not uncommon.

Jersey.

Most of the stone now raised in this island is used for local purposes, although until recently it was sent in large quantities to England. One is forcibly reminded of this in some of the quarries where gantrees and steam-engines are lying idle. It was not because the quality of the stone in these quarries is inferior that they have been so neglected of late; on the contrary, we can state with much confidence that the syenites and hornblendic granites of Jersey are generally of excellent quality. One has only to examine the old stone walls scattered throughout the island to be cognisant of the fact. We occasionally meet with books which inform us that the rocks of the Channel Islands are not more extensively used, because the stone does not occur in blocks of sufficient size. Now, however much this may be true of the other islands, it is certainly incorrect to apply the remark to Jersey. The quarries in the south-west part of this island have been worked a long way into the sides of the hills, and entire blocks may now be seen, both detached and *in situ*, which no machinery could conveniently shift. The upper parts of the quarries, as usual, contain but comparatively small blocks, and people are apt to run away with the idea that these represent the largest size obtainable, when the workings are not on an extensive scale. As a rule, the blocks become larger as the rock is worked into.

We suspect that the reason why these large quarries have been almost abandoned is a purely commercial one. Although so near the sea, the nature of the coast forbids the approach of ships in which the stone could be loaded, except in the calmest of weather, and unless a harbour could be constructed close by,—a very expensive operation,—it is clear that the whole of it intended for shipment must be sent to St. Aubyn's or St. Helier's, a process which materially adds to its cost.

Notwithstanding the quantity of stone raised, we are informed that there are no polishing works in the island. We are quite prepared to believe this, as many of the polished slabs and columns in St. Helier's appear to be made of Peterhead granite and not of local stone. The absence of steam drills and other machinery of a like nature is very conspicuous, and the demand would have to be much greater than at present to enable such to be profitably used. We notice, too, that even some of the buildings at present being erected in that town are partly made of granite brought from France. This is a case somewhat analogous to taking coals to Newcastle.

We were rather surprised to find in some parts of the island that the granitic bosses had weathered so deeply, and this in close proximity to quarries containing good stone. It is usual to find some earth and decomposed rock in all districts where the stone is sheltered and contains very much felspar, but here the reddish earth, with loose quartz crystals sticking out from it, may be sometimes seen to a depth of from 30 ft. to 35 ft., a little way inland; and if this is taken to indicate,—as it is in some districts,—that the rock is easily decomposable, a wrong impression would certainly be created. It is a good proof that the island has not been raised out of the sea in recent times.

Engineers, who have not been to Jersey, should pay it a visit, if only to see another instance of the enormous power of the waves as exemplified in the abandoned works at the breakwater at St. Helier's. Some years ago, a gigantic scheme for extending the accommodation for shipping was begun here. It consisted in connecting several little islands by a broad wall made of pieces of broken granite and bound together in the form of concrete. The work was commenced and had proceeded to some distance when the sea made three successive breaches in the wall, the third one being of such a nature that the work had to be abandoned. Huge blocks of rough concrete may now be seen piled on each other, and these are shifted about every winter for short distances by the action of the sea. When one looks at the magnitude of this construction, it is perfectly marvellous that the waves should have been capable of making such havoc.

We may mention that a large wall at Greve de Lecq was breached in a similar manner, and stands a silent monument of the power of wind and water, and a caution to those who have to deal with marine works. It would be outside our province to give any reasons for the failure of these large undertakings, but we fancy that they are capable of explanation. At any rate, the use of concrete *versus* granite is one of the questions that might be profitably discussed in connexion with the problems presented.

Close to *Greve de Lecq* there is a quarry in hornblendic granite. The stone somewhat varies in texture from very fine to medium grain, and is of dark and light grey colours, slightly tinted pink in places. Quartz occurs in small crystals, but in the coarser varieties it is sometimes distributed in such a manner as to show prominently. The mica is black, the hornblende dark green, and the felspars are exceedingly minute, being either white or light pink, according to the tint of the rock. The junction between the fine and medium grained granite is well seen in the quarry.

At *Grosnez*, the extreme north-west point of the island, the hornblendic granite is rather coarse-grained, this being principally occasioned by the large size of the orthoclase felspars, many of which are twinned. Some of these are pink,—the general colour of the stone,—whilst the smaller crystals are almost white, or light red. The very little mica present is black, the

* It was Mr. Pullan's statement, reported by us.

† They form a bit of interesting history for modern archæologists, no doubt; but they look very ugly, and they were probably left by the Mediæval builders merely to save trouble, not for "historical" reasons at all.—ED.

hornblende dark green, and the small quartz grains appear smoky.

Mont Mado Quarries.—These are in full working order and are situated in the north of the island. A steam crane lifts the detached blocks from the bottom of one of the quarries to the level of the workmen's shops. The stone is a fine-grained syenite, and not a "granite." Mica certainly is present, but not discernible until after a protracted search, and occurs in such minute quantities that it does not affect the main structure of the rock: so we prefer to describe it as an accessory mineral. The stone is of two colours, pink and dirty white, due, as usual, to the prevailing tint of the felspar. This mineral, although plentiful, occurs in small crystals. The quartz is in small rounded grains, and their shape gives the rock a peculiar granulated appearance, seldom seen in syenites. This is more particularly the case with the lighter coloured stone. Hornblende is dark green, although black in places. Magnetite is also present in small quantities.

Large blocks are raised from the Mont Mado Quarries, and the very even grain can be well seen in them. The rock is comparatively easily worked, and is largely used in Jersey for all kinds of building purposes, kerbs, &c.

La Perruque Quarries.—Although quite close to Mont Mado the syenite from these quarries is coarse-grained, due principally to the orthoclase felspar being large and porphyritic. Mica is in very small quantities as an accessory mineral, hornblende being very abundant, and the quartz transparent and in little grains. It is now mostly used for local purposes.

La Moye Quarries.—These very extensive quarries, in the south-western part of the island, are now not much used. The remains of past industry may be seen in the shape of enormous spaces of "opened up" rock, a gantree, and some steam-boilers and engines. The stone is a coarse-grained syenite, presenting all the appearances of ordinary granite, but the remark made respecting the mica in the Mont Mado stone applies equally to this. All the minerals are large and the complicated manner in which they are interlocked causes the material to look very compact. The colours are of various tints of pink and grey. The felspar ranges from vermilion to smoky white, these different tints being often seen in one piece of stone. In those parts of the quarries where the general colour of the mineral is pink or yellow, hornblende occurs in minute quantities. In the lighter kinds, it is very abundant, being dark green and frequently occurring in needle-shaped crystals: perhaps a little schorl is present.

A vein of fine-grained syenite of a dark green colour, and very much resembling the ordinary Guernsey road-metal, runs through part of these quarries, but is not sufficiently large to cause it to be worked, more than is necessary for clearing up the face of the stone.

La Moye stone may be seen in buildings in all parts of the island, and it has been used in the construction of Chatham Dockyard and other large engineering works in England.

Portlet Bay Quarries.—These are on the south side of the island, close to Noirmont Point. This syenite is similar in appearance to that of La Moye, the crystals not being at all well defined, and are so much mixed up that the rock looks compact. Here and there the orthoclase is twinned on the Carlsbad type.

Southill Quarry is close to St. Helier's, and is principally worked for road-metal. The syenite is very fine grained and of a pink colour, due to the tint of the felspar. If mica were present, it would look exactly like the hornblendic granite of Mountsorrel. Hornblende is abundant. A vein of dark coloured syenite, similar to the Guernsey stone before referred to, runs throught he rocks on the shore up to this quarry, and if it could be easily got at, and were a little wider, the quarrying of it would form a profitable undertaking. A lava dyke also occurs not far from the head of the present workings.

There are, in addition to those mentioned, quarries in the central and eastern parts of the island.

RECENT PATENTS.

ABSTRACTS OF SPECIFICATIONS.

11,560, Fenders for Tile Hearths. S. B. Sutcliffe.

A number of tiles are bevelled at their edges to the desired angle, and placed with their faces downwards in a suitable mould to form the shape and section of the fender. The mould at the back of the tiles is filled in with liquid cement and chippings of tile or pieces of slate, metal, or other suitable filling material, which is allowed to set hard. The fender thus made is effective in appearance, and of sufficient strength to resist all ordinary wear and tear.

11,230, Draught or Weather Boards for Doors. S. Farrar.

Near the bottom of the door a bar of wood is attached by being hung on pintles by staples or eyelets, so arranged that the bar can freely slide up and down on the rods or pintles. On the underside of the bar, near each end, are attached suitably-sized bowls or friction-pulleys, which rest upon the floor, and as the door is opened or closed the draught-excluder will rise and fall to any irregularities or unevenness in the floor. The draught-excluder is cheaper, and causes no scraping or friction upon the oilcloth or carpet, and it can be easily attached either to the inside or outside of doors, and when not required it can be easily lifted off the rods.

8,463, Latches for Doors and Gates. W. H. Horn.

Instead of being made of two working parts, viz.:—(1) a rising and falling catch, and (2) a lever for working the same. This has three working parts, —(1) a short rising and falling catch, (2) a cross lever, and an additional finger lever with a turned-up end and a thumb-piece. This horizontal lever works on a pivot beneath the rising and falling catch, the other end reaching over and slightly beyond the handle so as to be operated therefrom by the thumb or finger, and being pressed down it lifts the catch out of a staple.

7,712, Window Fastener. H. H. Denne.

This fastener, instead of the ordinary method, substitutes a catch or box on one of the meeting rails, and on the other a lock which shoots a bolt therein, and which lock may be fastened with a key. Not only is the unpleasant rattling of the sash prevented, but the sash cannot be unfastened from outside or inside without the use of the key.

NEW APPLICATIONS FOR PATENTS.

August 20.—10,652, H. Provis, Self-Locking Coal-cellar Plate.—10,670, E. Edwards, Iron Girders for Buildings.—10,677, J. Hill, Bath-fittings.—10,682, P. Everitt, Water-closets, Lavatories, &c.—10,691, Stollwerck and Stollwerck, Stairs or Staircases.—10,693, C. Drake, Artificial Stone.

August 21.—10,701, H. Sutcliffe, Ventilators.—10,723, H. Ramsden, Stoves.

August 23.—10,769, E. Harding, Lavatory Appliances.

August 24.—10,788, A. Smith and J. Roberton, Manufacture of Portland Cement.—10,829, C. Dobbs, Scoria Paving Blocks.—10,834, C. Groombridge and J. Rickman, Door-bolt.—10,836, J. Stow, Screw Fasteners for Windows.

August 25.—10,853, A. Frey, Fire-place with Ventilating Arrangement.—10,860, E. Nunn, Bricks, &c.—10,876, J. Pawsey, Painting Brushes.

August 26.—10,887, H. Brand and W. Harper, Hinges.—10,915, H. Haddan, Parquetry.—10,917, D. Brown, Astragals for Roofs and Side Lights.—10,919, T. Bayliff, Chimney-tops, &c.—10,920, F. Henson, Door-bolts.

PROVISIONAL SPECIFICATIONS ACCEPTED.

3,274, F. Hamilton, Nail Screw.—8,958, J. Richardson, Band Saws and Files for same.—9,244, S. Yeates, Surveyors' Levels.—9,778. A. Black, Up-Current Ventilators.—9,997, H. Macklin, Cooking Ranges.—8,837, F. Lyte, White Pigments.—9,409, P. Martinier, Dovetailing Apparatus.—9,507, J. Evans, Wood Moulding Machines.—9,859, H. Dean, Gullies and Grease Traps.—9,860, H. Dean, Drain and Ventilating Traps.—9,987, T. Whitaker, Pile-Driving Machines.—10,128, J. Daglish, Lime Kilns, &c.—10,219, P. Smyth, Fittings for Drains, Sewers, &c.—10,265, C. Webb, Automatic Dry Closet.—10,453, R. Evered and N. Coleman, Flushing Cisterns.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to opposition for two months.

13,329, J. Beresford and W. Restall, Water-Closets.—3,928, A. Huxley and Others, Syphon Flushing Cisterns.—8,246, H. Knolke, Windmills for Cowls, Ventilators, &c.—9,439, T. Kennedy, Testing Pipes.—12,839, G. Wickham, Flushing Cisterns and Water Waste Preventers.—12,908, S. Pitt, Manufacture of Lime, Cement, Mortars, Concrete, Artificial Stone, &c.—14,222, J. Taylor, Saw Spindles.

RECENT SALES OF PROPERTY.

ESTATE EXCHANGE REPORT.

AUGUST 24.

By DEBENHAM, TEWSON, & Co.

Finsbury—32, Finsbury Pavement, freehold £5,550
Finsbury Pavement—Profit rental of 76*l.* 14*s.*, term 13 years 590

By A. RICHARDS.

Enfield—Freehold house and premises 1,600
Chase Side—Two freehold cottages 415
Hoe-lane—Seven cottages, term 422 years, no ground-rent 567
Lavender Hill—Rose Cottages, freehold 500
A plot of freehold land 270

By W. HOLCOMBE.

Pimlico—107, Eaton-place, 35 years, no ground-rent £900
156 and 158, Ebury-street, 35 years, ground-rent 10*l.* 2,000

By PROTHEROE & MORRIS.

Southend—The freehold residence, Shorefield, and 4 acres 2,550

By F. JOLLY & Co.

Homerton—69 to 75 odd, Nisbet-street, 84 years, ground-rent 10*l.* 10*s.* 490
Stepney—81, Jamaica-street, 23 years, ground-rent 4*l.* 270

By H. RUTLEY.

Walworth—Ground-rent of 62*l.*, term 24 years 670
Hornsey-road—9, Harvist Mews, 56 years, ground-rent 8*l.* 100
Kentish Town—112, Weedington-road, 64 years, ground-rent 6*l.* 155

AUGUST 25.

By REYNOLDS & EASON.

Spitalfields—9 to 15, Ely-place, and 18 and 19, Finch-street, freehold 2,240
30, Church-street, freehold 980
Wandsworth-road—31 and 33, Dawlish-street, 23 years, ground-rent 9*l.* 210

By C. D. FIELD & SONS.

Old Kent-road—11 to 27 odd, Coburg-road, 34 years, ground-rent 36*l.* 2,935
33 to 45 even, Coburg-road, 28 years, ground-rent 30*l.* 4*s.* 1,670
24, Inville-road, 64 years, ground-rent 4*l.* 10*s.* ... 310

By B. BROWN.

Poplar—45, Stainsby-road, freehold 665

By G. PEARCE & SONS.

Holloway—116, Cottenham-road, 69 years, ground-rent 5*l.* 14*s.* 200

AUGUST 26.

By NEWBON & HARDING.

Aldgate—Moiety of Nos. 2 and 5, Hutchison-street, and 1A, 1, and 2, Hutchison-avenue, freehold... 920
Stoke Newington—15, Kynaston-road, 88 years, ground-rent 6*l.* 250
St. Luke's—34, Baltic-street, freehold 425

By E. STIMSON.

Clapham—71, Plough-road, freehold 550
Camberwell—124, Boyson-road, 65 years, ground-rent 6*l.* 10*s.* 400
Walworth—145, 147, and 149, Hill-street, 13 years, ground-rent 10*l.* 10*s.* 265
157, 159, 161, and 173, Hill-street, 9 years, ground-rent 21*l.* 280
6, South-street, 75 years, ground-rent 7*l.* 420
34 to 40 even, Runham-street, 81 years, ground-rent 14*l.* 790
Lambeth—64 and 65, York-street, 14 years, ground-rent 16*l.* 340
Old Kent-road—1, Chumleigh-street, 66 years, ground-rent 6*l.* 15*s.* 280
Brixton—43, Tintern-street, 89 years, ground-rent 6*l.* 6*s.* 255
Kingsland—16, Sandringham-road, 79 years, ground-rent 8*l.* 300
Beckenham, Mackenzie-road—A plot of freehold land 70
Blackfriars-road—The lease of 28, Cross-street, 4 years, ground-rent 7*l.* 10*s.* 40

By A. W. J. BUDDS.

Kingston—Ground-rents of 108*l.* a year, reversion in 92 years 2,450

AUGUST 27.

By FLOOD & SONS.

Westbourne Park—50, Cornwall-road, 76 years, ground-rent 13*l.* 500

Miscellanea.

Remains of an Ancient Church in Norway.—A discovery of the remains of one of the oldest churches in Norway has just been made at Throndtjem. In making some excavations in the central part of the town, the workmen came upon several stone walls some 10 ft. in thickness, and a number of vaults, coffins, and human bones. The walls are believed to be the foundations of the second church built in Norway after the Reformation in that country, which was called St. Olave's Church. It was built towards the end of the eleventh century by King Magnus Barefoot, grandson of Harold Haardraade, who fell at Stamford Bridge, who wrested the Orkneys and Shetlands from Scotland (1096), and conquered the greater part of Ulster and Leinster, on which expedition he was slain (1103). The church was burned down in 1531, on the same occasion that the celebrated cathedral at Throndtjem was destroyed by fire for the third time. The latter, the so-called Christ Church, was rebuilt, and is now under restoration, of the progress of which we have given an account on a previous occasion. In the thirteenth century the Church of St. Olave was still the parish church of the city of Nidaros, as it was then called, and in 1309 it became the church of the Franciscan order of monks, who emigrated from England to Norway. In the crypt of the church the remains of several Norse chieftains or Vikings are known to have been deposited, and it is doubtless these which have now come to light. The remains of the church, which are as solid as concrete, must be about 800 years old.

A New East Window has been inserted in St. Dunstan's Church, Stepney, the design and work of Messrs. Lavers & Westlake. It is the gift of Mr. Spenser Charrington, M.P.

Union Infirmary, Newcastle-under-Lyme.—Important extensions have just been completed at the Union Workhouse. The new infirmary is built in one block on a site specially acquired for the purpose, and stands in the rear of and parallel with the workhouse. It is in a plain, simple, and economical style, built of dark brindled bricks relieved by bright red terra-cotta quoins and facings. The entire frontage is 199 ft. The building is connected with the present infirmary and workhouse by a covered way leading to the centre of the block. The accommodation comprises male and female wings to the left and right respectively, these being connected with an administrative central block by open staircases. Each wing possesses a day ward, general wards, and separation wards for special cases, and occupies a frontage of 81 ft. 6 in., while the administrative blocks and staircases cover a frontage of 36 ft. The wings have ground and first floors, and the central block is provided with an additional floor, which takes the form of children's wards. The infirmary affords accommodation for sixty adults, six children, and two nurses, with the requisite provision in the shape of surgery, stores, cellarage, &c. A little distance to the rear a mortuary and other offices have been built. The wards are 20 ft. wide and 11 ft. high. The completion of the infirmary signalises the carrying out of the first contract. At the earliest possible moment the inmates of the old infirmary will be removed to their new quarters, and the second portion of the extensions and improvements at the Union Workhouse will be proceeded with. This contract includes the remodelling of the old infirmary for the accommodation of forty-eight beds, which will be devoted to the old and infirm inmates. The contractor for the building is Mr. Richard Bradbury, of Stoke, and the work throughout has been executed under the superintendence of the architect, Mr. John Blood. The cost of the structure, together with the roads, boundary-walls, railings, drainage, water-supply, gas-fittings, covered way, and other appurtenances, but exclusive of the furniture and site, is 4,260*l.*

The Telephone of 1664.—A quotation, not much known, from the works of Robert Hooke, published in 1664, would seem to show that the telephone is not such a modern invention as is generally thought. Hooke says:—"And as glasses have highly promoted our seeing, so 'tis not improbable but that there may be found many mechanical inventors to improve our other senses of hearing, smelling, tasting, touching. 'Tis not impossible to hear a whisper a furlong's distance, it having been already done; and perhaps the nature of the thing would not make it more impossible, though that furlong should be ten times multiplied. And though some famous authors have affirmed it impossible to hear through the thinnest plate of Muscovy glass, yet I know a way by which it is easy enough to hear one speak through a wall a yard thick. It has not yet been thoroughly examined how far octocousticons may be improved, nor what other ways there may be of quickening our hearing or conveying sound through other bodies than the air, for that is not the only medium. I can assure the reader that I have, by the help of a distended wire, propagated the sound to a very considerable distance in an instant, or with as seemingly quick a motion as that of light, at least, incomparably swifter than that which at the same time was propagated through the air, and this not only in a straight line, or direct, but in one bended in many angles."—*Iron.*

PRICES CURRENT OF MATERIALS.

TIMBER.	£.	s.	d.	£.	s.	d.
Greenheart, B.G. ....ton	6	5	0	7	0	0
Teak, E.I. ....load	9	0	0	14	0	0
Sequoia, U.S. ....foot cube	0	2	4	0	2	7
Ash, Canada ....load	3	0	0	4	10	0
Birch "	2	10	0	4	0	0
Elm "	3	10	0	4	10	0
Fir, Dantsic, &c.	1	10	0	4	0	0
Oak "	2	10	0	4	10	0
Canada "	3	0	0	6	0	0
Pine, Canada red	2	0	0	3	10	0
" yellow	2	5	0	4	0	0
Lath, Dantsic ....fathom	3	0	0	5	0	0
St. Petersburg	4	0	0	5	10	0
Wainscot, Riga....log	2	15	0	4	0	0
" Odessa, crown	3	5	0	3	7	6
Deals, Finland, 2nd and 1st...std. 100	7	0	0	8	0	0
" 4th and 3rd	6	0	0	7	0	0
Riga	5	10	0	7	0	0
St. Petersburg, 1st yellow	8	0	0	14	0	0
" 2nd "	7	0	0	8	0	0
" white	7	0	0	10	0	0
Swedish	6	0	0	15	0	0
White Sea	7	0	0	17	10	0

TIMBER (*continued*).	£.	s.	d.	£.	s.	d.
Deals—Canada Pine, 1st	17	0	0	30	0	0
" 2nd	12	0	0	17	0	0
" 3rd, &c.	6	0	0	10	0	0
" Spruce 1st	8	0	0	11	0	0
" 3rd and 2nd..	5	0	0	7	10	0
New Brunswick, &c.	5	0	0	7	0	0
Battens, all kinds	4	0	0	12	0	0
Flooring Boards, sq. 1 in., Prepared, first	0	9	0	0	13	0
Second	0	7	6	0	8	6
Other qualities	0	5	0	0	7	0
Cedar, Cuba....foot	0	0	3	0	0	3½
Honduras, &c.	0	0	2½	0	0	3½
Australian	0	0	2	0	0	3
Mahogany, Cuba	0	0	4	0	0	7
St. Domingo, cargo average	0	0	4	0	0	7
Mexican "	0	0	3½	0	0	4½
Tobasco "	0	0	4	0	0	6½
Honduras "	0	0	4½	0	0	6½
Maple, Bird's-eye	0	0	6	0	0	8
Rose, Rio ....ton	7	0	0	10	0	0
Bahia....	6	0	0	10	0	0
Box, Turkey	5	0	0	17	0	0
Satin, St. Domingo ....foot	0	0	7	0	0	11
Porto Rico	0	0	8	0	1	2
Walnut, Italian	0	0	4	0	0	5

METALS.						
IRON—Pig, in Scotland ....ton	0	0	0	0	0	0
Bar, Welsh, in London....	4	7	6	4	15	0
" " in Wales	4	2	6	4	7	6
" Staffordshire, London	5	10	0	6	0	0
Sheets, single, in London....	6	15	0	8	10	0
Hoops "	6	0	0	7	0	0
Nail-rods "	5	10	0	6	10	0
COPPER—						
British, cake and ingot ....ton	42	0	0	43	0	0
Best selected	42	10	0	43	10	0

METALS (*continued*).	£.	s.	d.	£.	s.	d.
COPPER—Sheets, strong	47	0	0	48	0	0
" India....	44	10	0	45	10	0
Australian	0	0	0	0	0	0
Chili, bars	39	7	6	39	15	0
YELLOW METAL....lb.	0	0	3½	0	0	4½
LEAD—						
Pig, Spanish	12	18	9	0	0	0
English, common brands....	13	5	0	13	7	6
Sheet, English	0	0	0	0	0	0
SPELTER—						
Silesian, special ....ton	13	15	0	13	17	6
Ordinary brands	0	0	0	0	0	0
TIN—						
Banca ....ton	0	0	0	0	0	0
Billiton	0	0	0	0	0	0
Straits	98	17	6	99	10	0
Australian	100	0	0	0	0	0
English ingots....	102	0	0	0	0	0
ZINC—						
English sheet ....ton	18	0	0	18	5	0

OILS.						
Linseed ....ton	21	17	6	22	2	6
Cocoanut, Cochin	32	15	0	33	0	0
Ceylon	25	10	0	25	15	0
Copra....	0	0	0	0	0	0
Palm, Lagos	23	0	0	23	10	0
Palm-nut Kernel	0	0	0	0	0	0
Rapeseed, English pale....	22	0	0	22	5	0
" brown	20	10	0	20	12	6
Cottonseed, refined	19	10	0	20	5	0
Tallow and Oleine	25	0	0	45	0	0
Lubricating, U.S.	6	0	0	10	0	0
" Refined	8	0	0	13	0	0
TURPENTINE—						
American, in casks....cwt.	1	6	6	1	6	9
TAR—Stockholm ....barrel	0	15	0	0	15	6
Archangel....	0	10	6	0	11	0

COMPETITIONS, CONTRACTS, & PUBLIC APPOINTMENTS.

Epitome of Advertisements in this Number.

COMPETITIONS.

Nature of Work.	By whom required.	Premium.	Designs to be delivered.	Page.
School Buildings	Sunderland School Brd.	50*l.*, 20*l.*, and 10*l.* ...	Sept. 25th	ii.

CONTRACTS.

Nature of Work, or Materials.	By whom required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.	Page.
Exhibition Buildings, Newcastle-upon-Tyne...	Executive Council	W. Glover	Sept. 3rd	ii.
Granite and Ragstone	Reigate Town Council...	*Official*	Sept. 7th	ii.
Building Boundary Wall....	Edmonton Union....	T. E. Knightley	Sept. 8th	xix.
Iron Fencing, Roads, &c., of Cemetery	New Shoreham Burial Board	A. Loader	do.	ii.
New Coast Guard Station and Battery	Admiralty	*Official*	Sept. 10th	ii.
Painting and Repairs	City of London Union...	do.	Sept. 13th	ii.
Broken Granite	East Ham Local Brd.	W. H. Savage	Sept. 14th	ii.
Erection of Dwelling-house, &c.		J. Colson & Son	Sept. 18th	ii.
Post-Office, Dumfries, N.B.	Com.' of H.M. Works...	*Official*	do.	ii.
New Schools, &c.	Wednesbury Schl. Brd.	E. Pincher	Sept. 20th	ii.
Erection of Prison, Peterhead	Prison Com. for Scotlnd	*Official*	do.	ii.
Road Repairs and Tar-Paving	Acton Local Board.....	C. N. Lailey	Sept. 21st	ii.
Paving Works....	Vestry of St. George the Martyr, Southwark	*Official*	do.	xix.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in.	Page.
Outdoor Superintendent	Stockton Corporation...	104*l.*	Sept. 13th	xvi.

TENDERS.

BARKING.—For the erection of a dwelling-house and shop in East-street, Barking, for Mr. Johnson Baker. Mr. C. J. Dawson, architect, Barking, Essex:—

R. Walters, Barking Side	£1,238 8 0
R. Goodey	1,178 0 0
J. Drake	1,092 0 0
W. Pavitt, Aveley	1,076 0 0
J. Cornell	1,076 0 0
D. Argent	1,065 0 0
C. Barnes, Ilford	1,057 0 0
W. Wood, Chelmsford	1,054 0 0
H. Carter, Grays	1,044 0 0
W. Watson, Ilford	1,022 0 0

BIRMINGHAM.—For the erection of stabling, &c., at Harborne, for the Birmingham Central Tramways Co., Limited. Mr. E. Pritchard, M.Inst. C.E., and Mr. J. Kincaid, M.Inst. C.E., engineers:—

James Moffatt, Moseley....	£5,157 0 0
G. Law, Kidderminster	4,613 0 0
J. Fell, Leamington....	4,600 0 0
W. Robinson, Birmingham	4,482 0 0
W. Bloore, Aston....	4,397 0 0
F. Rowbotham, Birmingham	4,290 0 0
J. Biggs, Handsworth....	4,263 9 6
J. Hartley,* Small Heath....	3,948 0 0

* Accepted.

BIRMINGHAM.—For the erection of a steam tramway depôt at King's Heath, for the Birmingham Central Tramways Co., Limited. Mr. E. Pritchard, M.Inst. C.E., and Mr. W. Lyster Holt, C.E., engineers:—

James Moffatt, Moseley....	£6,512 0 0
W. Robinson, Birmingham	6,150 0 0
G. Law, Kidderminster	6,077 0 0
J. Biggs, Handsworth....	5,578 6 0
F. Rowbotham, Birmingham	5,549 0 0
J. Hartley, Small Heath....	5,379 0 0
J. Fell, Leamington (accepted)	5,150 0 0

CAMBERWELL.—For alterations and repairs to No. 271, Camberwell-road, for Mr. Richards. Mr. W. A. Murphy, architect:—

Ford & Son	£260 0 0
Wood	208 0 0
Edgley....	198 10 0
G. Parker (accepted)....	196 0 0

CHINGFORD.—For the Chingford Drainage Works, for the Epping Rural Sanitary Authority:—

Neave	£10,400 0 0
E. Wilson....	10,044 0 0
C. Dickinson	9,990 0 0
J. Small & Sons	9,514 15 2
F. & F. J. Wood....	9,441 0 0
W. Nichols	9,196 15 0
J. Young	9,138 0 0
J. Jackson	8,768 0 0
W. Cunliffe	8,755 0 0
J. J. Robson	8,580 0 0
H. Potter	8,500 0 0
J. Hayward	8,385 0 0
W. Wood	8,300 0 0
J. Ford & Co.	8,249 0 0
H. Wells	8,200 0 0
C. Killingback....	7,995 0 0
W. French,* Buckhurst Hill	7,998 10 0

* Accepted.

CHESHAM (Bucks).—For the erection of new stores and dwelling-house, in the Broadway, for the Co-operative Society, Chesham. Mr. G. H. Green, architect:—

R. Darvell & Son, Chesham	£798 0 0
T. Honour & Son, Tring....	776 0 0
Chas. Monk, Boxmoor	710 0 0
W. C. Harding, Chesham....	702 0 0
A. Mead, Chesham	690 0 0
Geo. Darlington,* Amersham....	655 0 0

* Accepted.

CHESHAM (Bucks).—For the erection of two dwelling-houses and shoe factory, New Town's End-road, Chesham, for Messrs. Thos. Fulham & Sons, Queen's-road, Brighton. Mr. G. H. Green, architect, Chesham:—

A. Mead, Chesham	£1,480 0 0
Geo. Neal, Chesham	1,430 0 0
Geo. Darlington, Amersham	1,290 0 0
Chas. Monk, Boxmoor	1,260 0 0
T. Honour & Son, Tring (accepted)	1,198 0 0

CLACTON-ON-SEA.—For works at Christ Church, Clacton-on-Sea. Mr. T. H. Baker, architect and surveyor, Clacton-on-Sea:—

Capon	£2,932 15 0
Wood	2,745 11 0
Hook (too late)	2,743 0 0
Mason & Sons	2,725 11 0
Allen	2,633 4 10
Lee	2,618 18 6
Saunders	2,514 5 0
Demaid	2,446 7 7
Grimwood & Son	2,356 4 0
Everett & Son	2,340 0 0

CLAPTON.—For alterations at the Priory Tavern, Elderfield-road, Lower Clapton, for Messrs. Smyth Bros. Mr. B. Elsom, architect:—

Patrick & Sons	£393 0 0
Mower, Hackney	389 10 0

COODEN (near Bexhill).—For the erection of a cottage home at Cooden, near Bexhill, for Lady Clinton. Mr. J. B. Wall, architect, Walbrook, London:—

W. Hickinbotham, Teddington	£1,649 0 0
H. & F. Rodda, St. Leonards	1,629 0 0
Cruttenden, St. Leonards	1,584 0 0
Alf. Dore & Son, Eastbourne	1,578 0 0
M. Martin, Eastbourne	1,573 0 0
P. Jenkins, St. Leonards	1,570 0 0
Cornwell & Sons, Eastbourne	1,566 0 0
D. H. Snow, Hastings	1,498 10 0
J. Cole, Bexhill	1,496 10 0
T. S. Todd, Bexhill	1,397 0 0
T. H. Hutchings, Bexhill	1,296 10 0

DEPTFORD.—For rebuilding the Walter Arms, Addey-street, Deptford. Mr. W. T. Hunt, jun., architect:—

H. Jennings, Brockley	£800 0 0

[No competition.]

EALING.—For alterations and additions to business premises in Broadway, Ealing, for Mr. J. Moon. Mr. G. Ashby Lean, architect and surveyor, Ealing:—

Bailey	£298 0 0
Waters	280 0 0
Nye	279 0 0
H. & A. Jones	245 0 0

FOREST GATE.—For the erection of dwelling-house, stables, &c., at Forest Gate. Messrs. J. & N. Sharpe, architects:—

Beale	£1,948 0 0
Harler	1,773 0 0
Mower	1,687 0 0
Hipps	1,662 0 0
North Bros.	1,430 0 0
Boulter & Lee	1,385 0 0

HEREFORD.—For alterations and new shops, High-street, Hereford. Mr. W. W. Robinson, architect:—

H. Welsh	£930 0 0
Beavan & Hodges	795 0 0
W. Bowers & Co.	695 0 0
T. Lewis	660 0 0
J. Vale	625 0 0
W. B. Partington,* Hereford	615 0 0

* Accepted.

HEREFORD.—For the erection of a villa residence on the St. Ethelbert Estate, Hereford. Mr. W. W. Robinson, architect, King-street, Hereford:—

H. Welsh	£1,059 0 0
Beavan & Hodges	825 0 0
W. B. Partington	824 0 0
J. Hiles	767 0 0
T. Lewis	760 0 0
Wm. Bowers & Co.,* Hereford	745 0 0

* Accepted.

HOXTON.—For three shops, Mintern-street, New North-road. Mr. Brett A. Elphicke, architect. No quantities:—

Gould & Brand	£987 0 0
Ed. Porter	970 0 0
J. Fanthorpe	948 0 0
J. Jarvis, Tunbridge Wells	945 0 0

LONDON.—For new sanitary arrangements and other improvements at 39, Wimpole-street, W. Mr. Mark H. Judge, architect:—

H. Toten & Sons (accepted)	£491 0 0

LONDON.—For alteration at 213, Oxford-street, for Mr. A. Gianella. Mr. Banister Fletcher, architect:—

Eldon & Co.	£790 0 0
J. O. Richardson	632 0 0
B. E. Nightingale	615 0 0
Jackson & Todd	589 0 0
H. J. Williams (accepted)	533 0 0

LONDON.—For alterations to 45 and 46, Monkwell-street, E.C. Messrs. W. E. & F. Brown, architects:—

Trent Bros. (accepted)	£730 0 0

PIMLICO.—For alterations, shop front, and shop fittings, at 69, Buckingham Palace-road, for Mr. H. Hoadley:—

W. Rendel (accepted)	£500 0 0

RICHMOND.—For alterations at Cambridge House, for Mr. E. J. D. Paul. Mr. William Clissold, Stroud, architect:—

Sweet & Loder, Richmond	£2,069 0 0
Geo. Drew, Chalford	2,000 0 0
T. J. Messom, Twickenham	1,995 0 0
Maple & Co., Tottenham Court-road	1,886 0 0
Goddard & Sons, Dorking	1,730 0 0
W. O. & E. Reading,* Paddington	1,675 0 0

* Accepted.

ROTHERHITHE.—For building house, Parfitt-road, Rotherhithe, for Mr. Francis. Mr. E. Thomas, architect:—

		Allow for Old Materials.	Total.
Parfitt	£795	£15	£780
Almond	770	40	730
A. White & Co.	721	24	697
Chafen (accepted)	635	40	595

SHOREDITCH.—For rebuilding No. 47, Curtain-road, Shoreditch, for Mr. A. P. Campbell. Mr. P. Watkins, architect, Ilford:—

J. Smith	£1,397 0 0
Staines & Son	1,374 0 0
Lawrence & Sons	1,371 0 0
G. W. Beale	1,360 0 0
J. Sharman	1,319 12 0
Scrivener & Co.	1,272 0 0

WARLINGHAM.—For house at Warlingham, on the Duke's Hill Estate. Mr. George Baines, architect, Great Winchester-street, E.C.:—

Hunter & Bryant, Whiteleaf	£2,885 0 0
Masters & Sons, Anerley, S.E.	2,867 0 0
Sykes, Catford Bridge, S.E.	2,860 0 0
Sargeant, Hackney	2,749 0 0
Roberts, South Norwood	2,679 0 0
J. & J. Ward, Warlingham, Surrey	2,617 0 0
J. & C. Bowyer, Upper Norwood	2,530 0 0
W. Marriage, Pancras-lane, E.C.	2,388 0 0
W. Johnson, Wandsworth Common	2,360 0 0
Smith & Bulled, Croydon	2,193 0 0
Battley, Old Kent-road (accepted)	2,097 0 0

WEYBRIDGE.—For alterations to the Congregational Church and additions to schoolroom. Messrs. Peak, Lunn, & Peak, architects, Guildford:—

Martin, Addlestone	£590 0 0
Faulkner, Walton	582 0 0
Ingram & Sons, Hersham	540 0 0
King, Oatlands Park (accepted)	456 10 0

WOLVERHAMPTON.—For the erection of new class-room at St. Luke's Schools, Blakenhall, for the Rev. J. G. Addenbrooke, M.A. Mr. Joseph Lavender, architect, New Bank Buildings, Wolverhampton:—

G. Sant	£249 0 0
H. Gough	238 0 0
T. Morris (accepted)	210 0 0

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